

No. 12,485.

IN THE

**United States Court of Appeals
FOR THE NINTH CIRCUIT**

LEROY J. LEISHMAN,

Defendant-Appellant,

vs.

GENERAL MOTORS CORPORATION,

Plaintiff-Appellee.

DEFENDANT-APPELLANT'S OPENING BRIEF.

LEROY J. LEISHMAN,

Appellant, Pro Se.

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DEFENDANT-APPELLANT'S OPENING BRIEF.

I.

STATEMENT OF PLEADINGS AND FACTS UPON WHICH JURISDICTION IS BASED.

This is an appeal by defendant from a final judgment [R. 56] entered on September 9, 1949, holding that claims 7 to 11, inclusive, of Reissue Patent No. 20,827 are invalid and are not infringed by the manufacture, use, or sale of tuners as exemplified by Exhibits 1 and 2 filed with the complaint herein.

The jurisdiction of the District Court was based upon (a) U. S. Code, Patents, Title 35, Section 67; (b) the Declaratory Judgment Act, Section 274-D of the Judicial Code, Title 28, U. S. Code, Section 400 (now re-enacted as Sections 2201 and 2202 of the new Title 28).

The complaint [R. 2] alleges that claims 7 to 11 of Reissue Patent No. 20,827 were invalid and not infringed. Defendant's answer [R. 23] denies that the said claims

were invalid and not infringed; and defendant's counter-claim [R. 15] charges infringement of the said claims and asks for the usual accounting.

On October 3, 1949, defendant made a motion under Rule 52b, F. R. C. P., to amend the findings, conclusions, and judgment, as well as a motion for a new trial under Rule 59 [R. 59].

These motions were denied on November 2, 1949 [R. 99].

Notice of appeal from the final judgment was filed on December 1, 1949 [R. 99].

The jurisdiction of the Court of Appeals for the Ninth Circuit is based upon Judicial Code, Title 28, U. S. C., Section 1291.

II.

STATEMENT OF THE CASE.

A. Introduction.

1. Brief Statement of the Issue and of the Most Pertinent Facts.

This is a patent infringement suit, the subject matter of which pertains to automatic, or push-button, tuning devices for radio receivers.

The complaint [R. 2] was filed under the Declaratory Judgment Act and alleges that claims 7 to 11 of appellant's patent No. Re. 20,827 [R. 775] are invalid and not infringed by the automatic radio tuning devices manufactured by appellee General Motors Corporation. Appellant denied [R. 23] that the said claims were invalid and not infringed, and filed a counterclaim [R. 15] asserting that the said claims were *valid* and *infringed* by appellee's

tuners, and the court was asked for an accounting and an injunction.

The grant in 1938 of the patent here at issue was preceded by at least fourteen years of research all over the world to produce a satisfactory automatic tuner.

The first patent application in this field was filed in 1924, this application resulting in the Zenith Radio Corporation's Heath reissue patent No. 17,531 [R. 800]. On November 20, 1928, W. L. Jacke filed an application on an automatic radio tuning control [R. 809]. The latter application, owned by Philco Corporation, became involved in a series of patent office interferences with the said Heath patent [R. 1083, 1092, 1096 and 1101], and other interferences were declared between Jacke and applications filed by Butler [R. 1083], Rice [R. 1092], Trenor [R. 1092], Crilly [R. 1114], Thomas [R. 1120], Long [R. 1125] and Goldsborough [R. 1129]. The Long application was owned by Western Electric Company, Inc. [R. 1128], the Goldsborough application by Westinghouse Electric & Mfg. Co. [R. 1131], the Rice application by General Household Utilities Company [R. 1113], and the Trenor application by John Hays Hammond, Jr. [R. 1094], whose wide inventive activities are probably within the judicial knowledge of the court.

Some of these early automatic tuners were very crude [See Zenith's Heath patent, R. 800] and others were very complicated [See Philco's Jacke patent, R. 809], yet these large interests fought long interferences over them that were finally terminated by the decision in the case of *Jacke v. Long; Jacke v. Goldsborough*, 111 F. 2d 184, which involved the Philco, Western Electric and Westinghouse

interests. As a result of the delays entailed by these interferences, the Jacke patent did not issue until 1942 [R. 809], fourteen years after it was applied for. The interferences involving the Zenith Radio Corporation's Heath application were terminated in the federal courts in 1939 [R. 1092], fifteen years after Heath's application was filed.

These long-fought interferences show the importance which Zenith, Philco, Western Electric, Westinghouse, General Household and John Hays Hammond, Jr. attached to the patent applications that were involved, yet none of the devices disclosed in these applications ever came into commercial use.

Striving for a more simple and effective tuner, other inventors and research organizations, both here and abroad, tried to adapt a type of mechanism first used in automatic clock setting devices and in cash registers. But in the radio art a problem is encountered that is not met with in these other fields. Each button or key of an automatic tuner must be capable of being adjusted, or "set," so that it will bring in any one of the hundreds of broadcasting stations which the user may desire. This involved unexpected difficulties. In the simplest forms of the mechanism, the parts tended to "creep," or move, during the setting process, and it was extremely difficult to get them adjusted properly. This difficulty, where it was removed at all, was dealt with by introducing many extra parts, or else tedious methods of adjustment were employed.

The record shows (and the record will be specifically referred to hereinafter) that various experimenters and

engineers, including those of Zenith Radio Corporation and General Motors, developed four different tuners each effecting a solution to the "creeping" problem in a different but very complex manner. The Zenith tuner solved the problem by introducing eighteen extra parts. Soffietti, in Italy, devised a creep-free tuner that had only one extra part per button—or five extra parts in a five-button, or five-station, tuner; but this tuner was very difficult and tedious to adjust. Lane and Mackey, in the United States, developed a very complex tuner that also defeated the "creeping" difficulty, but it was extremely tedious to adjust and very impractical. General Motors Corporation improved upon the Zenith tuner, but the number of extra parts required in a five-button tuner was twenty—that is, four extra parts for *each button*.

Defendant Leishman solved the problem *without adding any extra parts whatever*. As soon as his solution became known, it was immediately adopted by a long list of radio manufacturers as hereinafter shown. Zenith Radio Corporation had long since discarded its complicated Schaefer tuner that defeated "creeping" by adding eighteen extra parts; but after Leishman's simple solution appeared, Zenith purchased tuners embodying Leishman's principle from his licensee, Crowe Name Plate & Manufacturing Company, and later began manufacturing its own tuners of this type with an announcement which said: "This system is so simple and fool proof, that complete replacement should seldom, if ever, be necessary." [R. 1140.]

General Motors abandoned its own creep-free tuner in favor of appellant's more simple solution and used Leishman's construction in more than *one million* radio receivers up to the time of the trial.

After its own engineers as well as those of the Zenith Corporation had failed to arrive at Leishman's simple structure, the giant General Motors Corporation now comes into this circuit with a Declaratory Judgment action and asks this Honorable Court to hold that Leishman's solution involved only mechanical skill. The lower court so held, and it is from that decision that this appeal is taken.

2. Previous Litigation.

The patent claims that are here involved have been litigated in four different infringement suits—three of them in this circuit.¹ These claims have been held valid, and invalid; infringed, and not infringed, by tuners that are patentwise the same. But none of the previous records contained so much pertinent evidence as the record in the present case, and appellant therefore believes that this Honorable Court will be able to secure a clearer understanding of the facts with respect to validity and infringement than has heretofore been possible. None of the previous decisions in this circuit is *stare decisis* here. Not only does the new evidence make former decisions with respect to this patent inapplicable, but recent decisions of this Honorable Court and of the Supreme Court are of such a nature that an entirely new adjudication is required.

The first case involving the claims here at issue was *Leishman v. Associated Wholesale Electric Co.*, 36 Fed. Supp. 804. That suit, in which the accused device was

¹Only two of these four suits were brought by Leishman. The other two were filed under the Declaratory Judgment Act by large corporations who wanted the patent declared invalid or their own products held free of infringement.

manufactured by Crosley Corporation, was brought in the U. S. District Court for the Southern District of California. In that case, where the record lacked many of the important facts here presented, Judge Ben Harrison held the claims invalid for want of invention, saying that Leishman's solution was well known in the art "when you desire parts to move together harmoniously and free from friction." Leishman appealed, pointing out that the problem was exactly opposite from this—that the parts must be prevented from moving even a hair's breadth. This Honorable Appellate Court struck out the lower court's holding that the claims were invalid for want of invention (137 F. 2d 722, at 728). The presumption of validity was thus restored. But the Appellate Court held that Crosley had avoided infringement by operating the combination by means of a plunger instead of a lever as shown in the patent.

Leishman then filed a suit in the United States District Court for the Western District of Oklahoma against The Richards and Conover Company, Civil Action No. 2155, charging infringement of the same claims through the sale of Motorola radio receivers equipped with automatic tuners, patentwise the same as those accused in the *Associated* case, *supra*. The district court in that case held the claims "clearly valid and clearly infringed." [Finding 6 on p. 29 of printed record filed with Plaintiff's Supplemental Brief and designated as part of the present record on appeal.]

While the Oklahoma suit was pending, Radio Condenser Company and General Instrument Corporation filed a Declaratory Judgment action against Leishman in U. S. District Court for the Southern District of

California.² Radio Condenser stated that it manufactured the tuners used in the Motorola radio receivers sold by the jobber-defendant in Oklahoma. General Instrument Corporation joined Radio Condenser Company as a plaintiff on the alleged ground that it manufactured tuners like those made by Radio Condenser. These plaintiffs asked for a summary judgment of non-infringement, stating that there was no need for a trial because their tuners were admittedly the same patentwise as those freed in the *Associated* case, and they petitioned that Leishman be enjoined from prosecuting the Oklahoma action. Leishman was not enjoined, but subsequent to the entry of the interlocutory judgment in the district court in Oklahoma, the requested summary judgment of non-infringement was granted by Judge Beaumont and affirmed by this Honorable Appellate Court (167 F. 2d 890).

General Motors Corporation, the instant plaintiff, filed its Declaratory Judgment complaint shortly after the judgment in Leishman's favor was entered in Oklahoma. The trial was held while the appeal in the Oklahoma case was pending before the Court of Appeals for the Tenth Circuit, which rendered its decision before Judge McCormick entered his opinion herein.

The Court of Appeals for the Tenth Circuit rendered two opinions in the said Oklahoma case of *Leishman v. The Richards & Conover Co.* (172 F. 2d 365). The first of these opinions was based upon the theory that defend-

²The agreements under which these concerns acted together in bringing the action, have since been held in violation of the Sherman Act. *United States v. General Instrument Corporation, Radio Condenser Company, et al.*, 87 Fed. Supp. 157.

ant's solution of the problem was well known to skilled workers in the art. Leishman filed a petition for a rehearing showing that this was not the case; that the opposing expert had admitted that he knew of no such prior use; and that the matter could be clarified if the court had access to one of the exhibits that had been designated as part of the record on appeal, but which had not been transmitted to the Appellate Court. In the second opinion the said court based its decision upon its own mathematical analysis of the problem that confronted the inventor; and the court, ignoring the record as to what the workers in the art had *actually* done, held that such workers would make an analysis like that made by the court and readily arrive at the solution set forth in the patent. The district court in Oklahoma was accordingly reversed in its holding that the claims at issue were valid.

After the decision of the Court of Appeals for the Tenth Circuit became available, Judge McCormick rendered the decision herein, stating that [R. 42] "while the decision of the appellate court in the Tenth Circuit (Richards and Conover Company v. Leishman, 172 F. 2d 365), does not operate to control us in this action, our own Court of Appeals having never specifically invalidated the patent claims in issue, we think, however, that the appellate decision in the Tenth Circuit having been based upon substantially the same record as made herein, we should and do consider such decision as highly persuasive and as weakening any presumption of validity to the claims in the suit [that] would otherwise attach to the Leishman Reissue Patent by reason of its issuance.", and the claims herein were accordingly held invalid.

Judge McCormick's frank statement that his own opinion was greatly influenced by the Tenth Circuit decision, created a unique and unusual situation. The Court of Appeals for the Tenth Circuit admitted that the analysis of "creeping" upon which its decision was based, was *its own* analysis, and the court did not contend that any such theory or expert testimony had been advanced by either side. The grounds on which the claims were finally held invalid were there presented *for the very first time* by the court itself in its final decision after a second hearing. Leishman consequently lost *The Richards and Conover* case on grounds on which he had never had his day in court. The trial of the present case had already been held, and Leishman thus had no opportunity to introduce expert testimony to refute these grounds in the present case either. It thus seems very unjust and highly improper that the Tenth Circuit decision which was based upon these grounds should have been used against Leishman in the instant case.

A somewhat parallel situation recently arose in the *Seventh* Circuit in the case of *Hazeltine Research, Inc. v. General Electric Co.*, 86 U. S. P. Q. 233, F. 2d A suit was filed in the District Court for the Northern District of Illinois involving a patent which the Court of Appeals for the *Sixth* Circuit had previously held invalid on a ground that had not been interposed in, nor considered by, the court below, nor had the ground been briefed or argued by either party. But notwithstanding the fact that the patent owner had thus never had its day in court on the ground upon which it had lost the *Sixth* Circuit case, Judge Sullivan in the Northern District of Illinois in the *Seventh* Circuit nevertheless granted a

summary judgment against the patent owner in the new case because of the Sixth Circuit holding. When Judge Sullivan's decision was appealed, the Court of Appeals for the Seventh Circuit on June 28, 1950, said (86 U. S. P. Q. 233, 235, F. 2d):

"As to Hazeltine v. General Motors, 170 F. 2d 6, it should be observed that the defense of 'statutory bar' was not interposed in the District Court. It was not briefed or argued by either party and not even considered in the lower court. *Consequently that decision is entitled to but little weight in the present proceedings.*" (Emphasis added.)

The judgment was accordingly reversed and the cause remanded to the District Court for a trial on the merits.

The Tenth Circuit decision which Judge McCormick followed here, was based upon a supposed analysis of the cause of creeping that contained grave errors, and the appellate court's ideas of mechanical forces were at variance with commonly known laws of physics. Appellant was consequently anxious to have the present case reopened so that experts could be brought into court to explain and demonstrate the facts. He accordingly filed a Motion for a New Trial under Rule 59 [R. 59], supported by affidavits from the three highest authorities on mechanical engineering in Southern California. Appellant thought that if a single affidavit from such an authority were presented, the court might think the affidavit represented an isolated view. He accordingly filed an affidavit from the leading authority in each of the three

Leading universities in Southern California—*i.e.*, California Institute of Technology, University of Southern California and University of California at Los Angeles [R. 71 to 83]. These authorities were in unanimous agreement that the analysis made by the Court of Appeals for the Tenth Circuit has no scientific basis whatever, and that the figures which the court drew are entirely worthless for any analytical purpose. But appellant's motion was denied [R. 99].

The present situation demonstrates the folly of not using the reliable method of determining invention recommended by this Honorable Court of Appeals for the Ninth Circuit in the recent case of *Pointer, d.b.a. Pointer-Willamette Co. v. Six Wheel Corporation*, 177 F. 2d 153 at page 162:

“ ‘Courts,’ said Judge Learned Hand, ‘made up of laymen as they must be, are likely either to underrate, or to overrate, the difficulties in making new and profitable discoveries in fields with which they cannot be familiar; and, so far as it is available, they had best appraise the originality involved by the circumstances which preceded, attended and succeeded the appearance of the invention. Among these will figure the length of time the art, though needing the invention, went without it: the number of those who sought to meet the need, and the period over which their efforts were spread: how many, if any, came upon it at about the same time, whether before or after: and—perhaps most important of all—the extent to which it superseded what had gone before.’ ”

This kind of evidence is available in abundance in the present case.

B. Explanation of the Specific Problem Involved and of the Gestalt Which Confronted the Inventor.

The patent claims at issue pertain to automatic tuning devices for radio receivers. In tuners of the type here involved, the user presses keys or buttons, each one of which causes the rotatable knob or dial to be turned to the exact position at which the desired station comes in. But before the keys may be so used, each button must be *adjusted* or *set* for the particular station desired. One of the purposes of the present invention is to make it easy to do this. Accordingly, one of the objects as set forth on the first page of the patent, is "to afford means whereby the apparatus *may easily be adjusted* so that a definite manual operation [the pressing of the key or button] will cause the desired rotatable element [the dial or knob] to be turned to a desired position." The question before the court is to determine whether appellant's "means whereby the apparatus *may easily be adjusted*" involved invention or only mechanical skill.

In *Pointer, d.b.a. Pointer-Willamette Co. v. Six Wheel Corporation*, 177 F. 2d 153, at page 159, this Honorable Court said:

"* * * the determination in each case depends upon the specific facts and the perspective of the situation, the gestalt, to use the expressive German word, which confronted the inventor in the particular case."

The court must therefore understand the exact situation that faced the inventor. The inventor is always faced with a problem, *not* with the solution. When the solution is presented to a court before it knows the problem, a knowledge of the solution makes it very difficult for such

court to view the problem in its true perspective. This memorandum will therefore first explain the background and the problem, together with the industry's method of meeting the problem, before discussing the solution which the court is to appraise.

It has already been mentioned (p. 4 hereof) that the first automatic tuners that were developed by the large radio and electrical interests never reached the stage of commercialization and that later inventors approached the problem by attempting to adapt a type of mechanism used in clock setting devices and in cash registers. The gestalt in this particular case will therefore be better understood if we first explain two of the early devices of this type.

It is agreed by both appellant and appellee that the Kettell patent [R. 817] No. 290,894, issued December 25, 1883, was one of the first devices for turning a rotatable shaft to a definite known position. This patent, in fact, is the first one on the list of pertinent prior art cited by appellee in the complaint [R. 7]. For the convenience of the court, Fig. 2 and a portion of Fig. 1 of the Kettell patent have been reproduced on the folding insert following the appendix at the back of this memorandum, together with Figs. 1 and 10 from a patent to Woodbridge, which will later be considered. If the court will unfold this insert the figures from the Kettell patent will lie adjacent the right hand pages of this memorandum for easy reference.

Before electrically operated clocks came into wide use, it was customary to equip clocks in business institutions with an arrangement whereby they were automatically set to the correct time every hour by means of an electrical impulse transmitted over wires. The Western Union operated such a service, and the clocks were set by an impulse transmitted from the U. S. Naval Observatory

in Washington. In Kettell's clock, as shown on the first page of his drawings, the electrical impulse causes the electro-magnet K, Fig. 1, by means of appropriate intermediate mechanism, to move the lever E (shown in blue) so that the projections or "tappets" (colored red) that extend to the left will engage the rod D (green), causing it to turn to the position shown in dotted lines. Inasmuch as the rod D is connected to the minute hand, this action causes the minute hand to point straight up to XII. Regarding these parts, Kettell says [R. 819, lines 67 to 74]:

"D represents a diametrically-arranged rod secured to or passing through the arbor of the minute-hand, so as to revolve with it.

"E is a vibrating lever, having two projecting arms on the side nearest the arbor of the minute-hand and which are arranged to operate the rod D when it is necessary to set the clock."

Fig. 2 from the Kettell patent shows a modification of this device in which the projections or tappets (colored red) are formed on a plunger (colored blue). In this modification the pins f on the disc perform the function of the rod D in Fig. 1. Of this arrangement, the patent says on page 820 of the present record, lines 81 to 83:

"a represents a slide working in ways b, and having lateral arms [tappets] similar to lever F, Fig. 1 [obviously this should be the lever E, because F is the cam], it serving the same purpose."

Either of the forms of Kettell's mechanism thus successfully rotated the minute hands to the exact position required, but there was only one such position—the one in which the minute hand pointed straight up to XII.

In cash registers and adding machines, as already mentioned early in this memorandum, it is also necessary to turn shafts to definite positions, but there are ten such positions instead of only one. Woodbridge's patent [R. 713] discloses a representative mechanism of this type. Its pertinence is recognized by appellee, who listed it as the third patent in the prior art cited [R. 7] in its complaint. As already mentioned, Figs. 1 and 10 of the Woodbridge patent are reproduced on the folding insert following the appendix hereto, along with the Kettell figures which have just been explained. The relevant figures from the Woodbridge patent, to which reference will be made, are at the right of the Kettell figures. In Woodbridge's Fig. 2 [see page 714 of the present record], it will be seen that this device is provided with ten keys bearing the digits 1 to 9 and a zero. These keys are on the ends of levers C¹. The opposite ends of these levers, shown in Fig. 1, page 713, are provided with ends arranged at different angles. These ends, or "tappets," engage a rocker d, shown on page 714. The rocker has two side bars d² and a central shaft d⁶ that connects with another shaft d³. Each of the tappets is arranged at a different angle with respect to the lever *of which it is an integral part*. As a result of the different angles of these tappets, the rocker will assume a different angle or tilt according to which lever is operated.

The modifications shown in Woodbridge's Fig. 10 show how the tappet c³ may be mounted on the end of a plunger c⁴ for moving the rocker d in the same manner as in the form illustrated in Fig. 1.

The significance of this patent was recognized in Judge Harrison's opinion in the Associated case, *supra*, where he said (36 Fed. Supp. 804 at 808):

“* * * when the machines are built, the manufacturer knows the various amounts that it is going to be necessary for the user to ring up, consequently, he governs the position of the rocker by the shape of the tappet that engages it. But in the radio industry the manufacturer cannot predetermine the stations in the various territories that are usable nor can he predetermine the idiosyncrasies of the ultimate user. As a result any radio tuning device must be easily and accurately adjusted in the home of the purchaser. Inasmuch as the movement of the rocker is controlled by the angle that the tappet is set when the two become completely engaged, it is necessary to be able to easily adjust the position of the tappet. Therefore, the problem before any person desiring to adapt a rocker and tappet to a radio tuning device was to develop a means for an accurate and simple method of adjusting the tappet so that it would, when in *complete engagement with the rocker, rotate it to the angle required to bring in the particular station that the user might designate.* Did this require mere mechanical skill or call into being inventive genius?”
(Emphasis added.)

On its face this seemed like a simple problem, but those who attempted its solution found that it involved peculiar and unexpected difficulties. This Honorable Court is called upon to determine whether the removal of these difficulties amounted to invention or only the skill of the calling. In its footnote No. 3 in the *Six Wheel* decision, *supra*, this Honorable Court quoted Judge Learned Hand on this point as follows:

"An invention is a new display of ingenuity beyond the compass of the routineer, and in the end that is all that can be said about it. Courts cannot avoid the duty of divining as best they can what the day to day capacity of the ordinary artisan will produce."

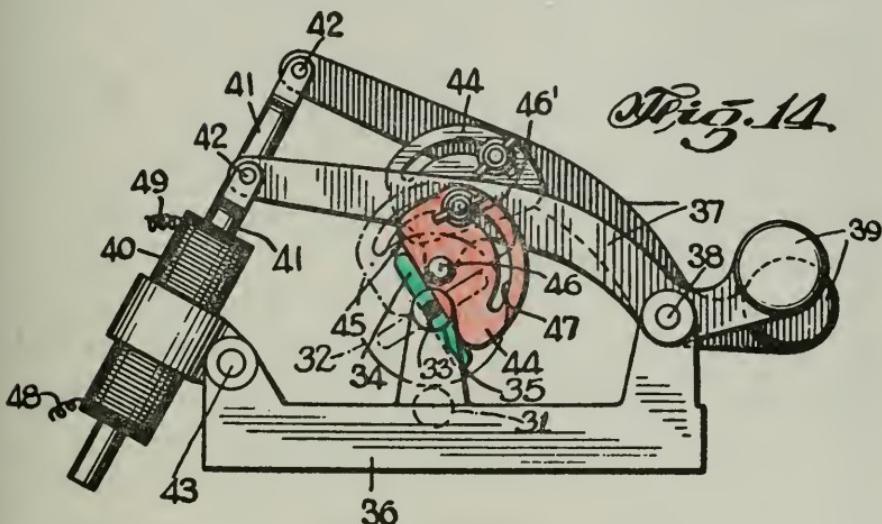
In the instant case, the court has before it a very complete record of what these artisans actually did, and the court is thus in a position to *know* whether appellant's simple solution of the problem involved more than mechanical skill. This problem is one that engaged the attention of skilled engineers, including those of Zenith Radio Corporation and General Motors Corporation, and their complicated solutions are in the record.

The nature of the difficulties that arose in providing an easily adjustable tappet, and a few of the devices that were proposed to overcome them, will be briefly described.

C. The Difficulties That Were Encountered in Providing Simple Adjustable Tappet Tuners Were Left Unsolved by Some Experimenters, While Others Solved the Problem by Introducing Complicated Auxiliary Parts or Complex Methods of Adjustment.

The difficulties encountered in providing an adjustable tappet for positioning a rotatable rocker are well demonstrated in the tuner proposed by Marschalk. His patent, No. 2,072,897, is Defendant's Exhibit E-1 [R. 822]. Fig. 14 from this patent is reproduced on the following page. The rocker 34 has been colored green, and the tappet 44 has been colored red. A model of Marschalk's tuner, Defendant's Exhibit E, was demonstrated at the trial [R. 131 to 133].

To adjust Marchalk's tappet, we must first loosen the wing-nut 46'. This releases pressure from the tappet, permitting it to turn freely about the pivot 46. The station



that is later to be tuned in *automatically* by this particular tappet is now tuned in *manually* by the regular tuning knob (not shown). Inasmuch as the tuning condenser 29 [Fig. 13, R. 824] is operatively connected to the rocker 34 (green), this tuning operation causes the rocker to be rotated until it assumes a definite angular position corresponding to the dial reading for that particular station. The angular position of this rocker is now to be used to determine the angular position in which the tappet is to be set. This may be accomplished by pressing down on the lever 37 until the loosely pivoted tappet firmly engages the rocker, thus causing the tappet to be turned to *the same angular position as the rocker itself*.

But as soon as one presses down on the lever to bring this about, a peculiar thing occurs. If the rocker happens to be in the tilted position shown in the figure, both the rocker and the tappet will flip around and tend to assume a horizontal position. If the rocker and tappet are in the

opposite tilted position shown in dotted lines, this same unexpected thing takes place.³

Because of the peculiarity just described, it becomes a difficult task to set the tappet on the Marschalk device. One must be certain that sufficient pressure is applied to cause the tappet to take the *exact* position of the rocker, and yet great care must be taken not to apply enough pressure to cause the rocker and tappet both to move. As demonstrated at the trial [R. 131-133], if the rocker is tilted toward either extreme position, slight excess pressure will sometimes cause the tappet and rocker to rotate more than 10 degrees. Even a small fraction of one degree is more movement than can be permitted, for that much of a deviation from the true angular position will throw the station out of sharp tune. In some instances, a station can be lost *entirely* by considerably less than one degree of movement.

On the Marchalk device, even the tightening of the wing-nut is apt to result in the inadvertent application of enough pressure to detune the set unless the rocker happens to be fairly close to horizontal. And obviously the setting is not completed until the wing-nut has been firmly screwed up so that the tappet will be held in its adjusted position.

³The peculiar flipping around that took place prior to the adoption of Leishman's teachings when a freely pivoted tappet was brought into engagement with a tilted rocker, will frequently be referred to in this memorandum as "creeping". This term was used by the expert opposing the patent in *The Richards and Conover* case. Its use was adopted by the district court judge in that trial, and it reappears in the opinion of the Court of Appeals for the Tenth Circuit. The use of the term "creeping" will thus avoid having to refer to this difficulty by such long terms as "the peculiar flipping around or unwanted rotation that normally takes place during the adjusting process when a freely pivoted tappet is brought into engagement with a tilted rocker."

After the tappet has been correctly positioned and locked in that adjusted position, it will be clear that any subsequent operation of the lever will cause the rocker to assume the same angular position as the tappet, regardless of the angular position in which the rocker may be found. Stated differently, this means that no matter to what other station the radio receiver may be tuned, the operation of this lever will bring in the station for which the tappet has been set. But if the tappet has not been accurately adjusted, or if there was the slightest movement during the adjusting process, the operation of the lever will not tune the station in properly. An inaccurate automatic tuner, or an automatic tuner that is critical to set up, is worse than no automatic tuner at all.

Regarding the degree of accuracy required, Mr. Leishman explained at the trial [R. 135 to 137] that $1/19$ of one degree is the maximum variation that is permissible. As shown by the numbers on a radio dial, the broadcast band extends roughly from 550 kilocycles to 1700 kilocycles—a range of about 1150 kilocycles [R. 136]. The usual rocker in a radio tuner turns through an angle of about 60 degrees [R. 136], which means that each degree represents an average variation of 19 kilocycles. Proper tuning requires that the radio receiver be tuned to within one kilocycle of the frequency on which the desired station is broadcasting [R. 136]. This, of course, corresponds to $1/19$ of one degree of movement of the rocker.

It has already been mentioned that the rocker in the Marschalk tuner frequently moves more than 10 degrees from its extreme tilted position when the loosened tappet is pressed against the rocker during the setting, or adjusting process. A movement of only six degrees is more than 100 times as much as can be tolerated.

Marschalk was far more than a mere mechanic skilled in the art. A perusal of his patent will reveal that he was an inventor of high order. Yet he left this problem unsolved. The reason for the peculiar behavior of his tappet and rocker during the adjusting process was obscure, and Marschalk apparently thought the difficulty was inherent in a tappet and rocker combination, and that it would therefore have to be tolerated.

Any inventor trying to position a rotatable rocker by means of an adjustable pivoted tappet would encounter the same difficulty during the adjusting process that is exhibited in the Marschalk device.

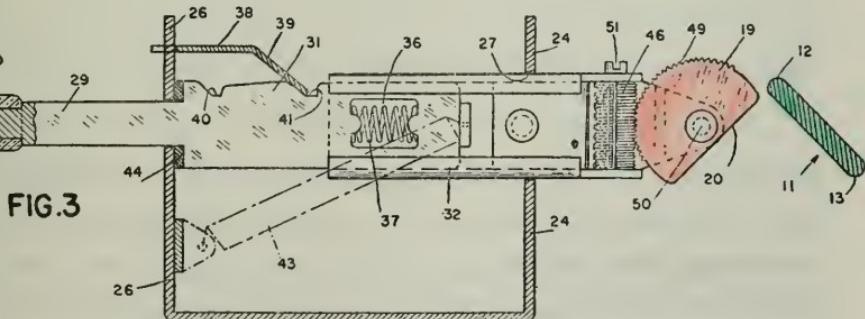
At least six other inventors tackled the problem of turning a rotatable member to predetermined angular positions by means of adjustable tappets. These were Sofietti in Italy, and Schaefer, Lane, Mackey, Schwarz and Leishman in the United States. Let us see how they fared.

1. Adjusting the Lane and Mackey Tuner Was a Very Slow Process.

Lane and Mackey's attempt to use an adjustable tappet to position a rocker, is disclosed in the file wrapper of their patent application [Deft. Ex. K]. A positive photostat of their Figs. 2, 3 and 4, is in evidence as Defendant's Exhibit K-1 [R. 842], and a reproduction of Fig. 3 is provided on the opposite page. These inventors have a rocker 11-12-13 (colored green) and a tappet 19-20 (colored red). To avoid the difficulties encountered when a freely pivoted tappet is brought into engagement with a tilted rocker, which Marschalk was unable to overcome, these inventors go to great extremes. It will be observed that their tappet is arranged so that it is

never free to turn and that it can be rotated only by the worm 46, which has threads that fit between the teeth 49 that are formed on the periphery of the tappet.

To adjust Lane and Mackey's tuner, one must first press the button 30 inwardly until the tappet, shown in red, engages the rocker, colored green. This causes the rocker to turn until it assumes the same angular position as the tappet, because the tappet is always locked against free rotation by the threads of the worm 46 that mesh with the teeth around the tappet. The end of a screw driver is then inserted into the screw-head 51, which is attached to the worm 46. When the screw driver is turned, the worm 46 is rotated, causing the tappet to turn the distance from one tooth to another every time the worm makes a complete revolution. If this is done while the tappet is in engagement with the rocker, the rocker will, of course, turn with the tappet. Consequently by constantly turning the screw driver, the tappet and rocker may be slowly rotated until the desired station is tuned in, and the tappet will then be properly adjusted. Whenever this tappet is again pressed into engagement with the rocker, the latter

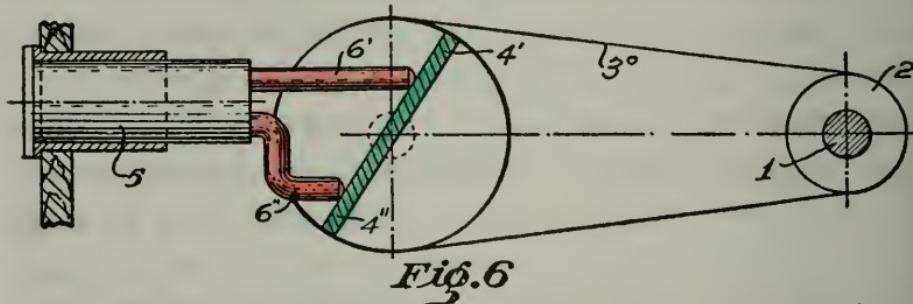


will assume the same angular position as the adjusted tappet, and the station for which it was adjusted will again be tuned in.

Inasmuch as Lane and Mackey's tappet is never free to turn, the difficulties exhibited in Marchalk's tuner are avoided. But the adjustment of Lane and Mackey's tappet is clearly a slow and laborious process.

2. Soffietti's Rocker and Tappet Tuner Was Very Difficult to Adjust.

The Soffietti Patent No. 2,388,581 [Deft. Ex. J], is in the record beginning at page 838. As shown on the patent itself, Soffietti's original application was filed in Luxembourg on January 25, 1938, before the issuance of defendant's patent that was re-issued as the patent here in suit. Soffietti's Fig. 6 is reproduced below.



Soffietti's rocker has been colored green, and it will be noted that he uses two different tappets (colored red), *each* of which has to be independently adjusted in accordance with the angular position of the rocker.

As can be seen in Fig. 1 of Soffietti's patent, his tappets 6' and 6'' are screws. The distance that each one protrudes from the button 5 can therefore be varied by screwing them out or in. It will be obvious that the lower tappet 6'', Fig. 6, cannot be rotated for this purpose unless the upper tappet 6' is first retracted so that it will not be in the way of the off-set portion of tappet 6'' when the latter is turned. In adjusting these tappets for a given station, the following procedure must therefore be followed: First

the upper tappet 6' must be retracted. Second, the lower tappet 6" must also be retracted. Third, the station must be tuned in by the manual knob (not shown), so that the rocker, colored green, will assume the corresponding angular position. Fourth, the lower tappet 6" must then be screwed out so that when the off-set portion is down, as shown in the figure, it will just engage the rocker. And fifth, the upper tappet 6' must be screwed out until it also engages the rocker.

Soffietti of course avoids any creeping difficulties, but his apparatus is far too tedious to adjust to be of any commercial value.

3. The Zenith Corporations' Schaefer Tuner Required 18 Extra Parts.

Another of the six inventors who tried, before Leishman's patent was granted, to turn radio control shafts to predetermined angular positions by means of adjustable tappets, was Schaefer. His patent, No. 1,906,106, appears at page 789 of the record, and commercial models of his tuners are in evidence as Defendant's Exhibits H and I. The Zenith Radio Corporation used Schaefer's mechanism in some of its sets around 1927 and 1928, but it disappeared from the market after a year or two [R. 147-148].

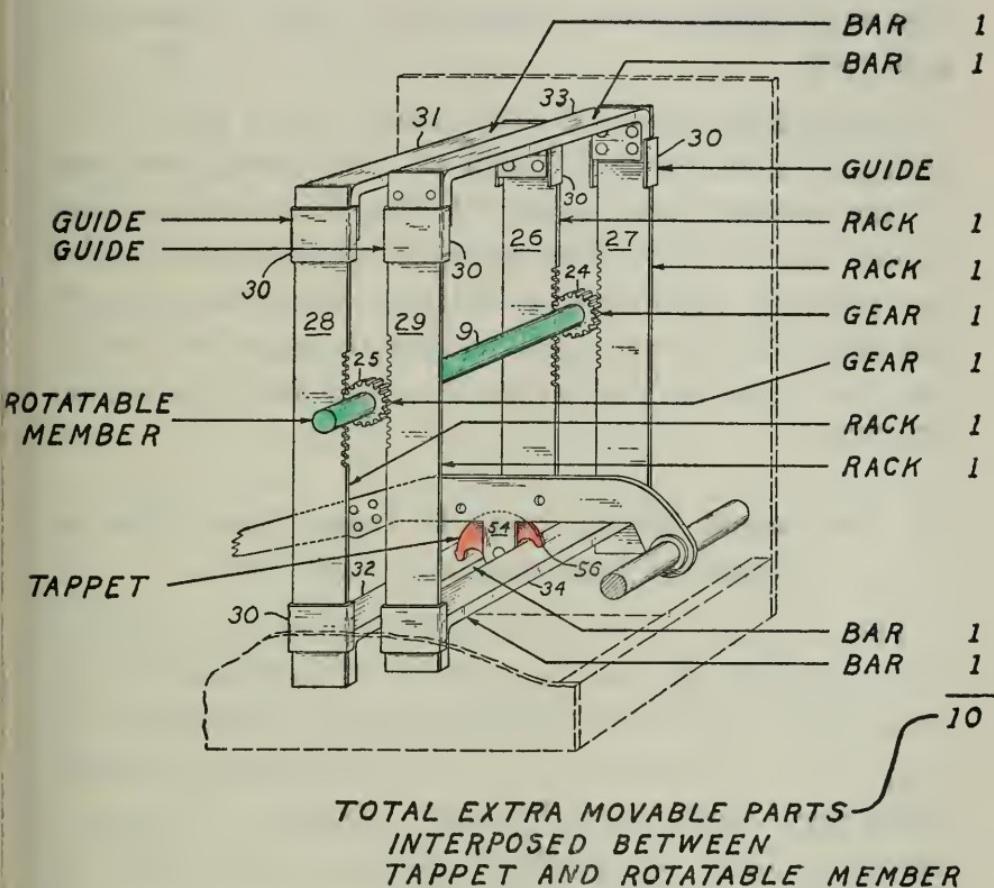
Defendant explained at the trial [R. 143-148] how Schaefer avoids the difficulties that are illustrated in the Marschalk mechanism by interposing 10 movable parts between his adjustable tappet and the rotatable member that is to be angularly positioned. These ten movable parts require eight guides.

The rotatable member of the Schaefer mechanism, corresponding to the rocker of Woodbridge, Marschalk,

Soffietti, and Lane and Mackey, is the shaft 9, Figs. 1, 3 and 4. His tappet 56 may be seen attached to the plunger 54 that extends downward from the lever 41 in Fig. 3 [R. 790]. In order that the court may readily identify the ten extra parts with the eight guides that Schaefer interposed between this tappet 56 and the rotatable member 9, a perspective drawing of a portion of Schaefer's mechanism is provided on page 27 hereof. Most of the extra parts may be seen on this drawing without the necessity of referring to several different figures. On opposite ends of the rotatable member 9, two gears 24 and 25 are rigidly mounted so that they turn with the shaft. Two racks, 26 and 27 are arranged so that their teeth mesh with gear 24. Two guides or ways 30 (Schaefer calls them "ears") are provided for each of these racks, but the two lower guides are not visible in this view. Two other racks 28 and 29 mesh with the other gear 25. Each of these racks also has two guides 30, one at the top and one at the bottom. The upper end of rack 26 is connected to the upper end of rack 28 by a cross bar 31. Another similar cross bar 32 connects the lower ends of these two racks. The other two racks 27 and 29 are similarly connected at the top and bottom, respectively, by cross bars 33 and 34. This construction provides two frames that simultaneously move up or down in opposite directions as the gears rotate.

Schaefer's tappet 56 (or "rocker" as he calls it) engages the two lower cross bars 32 and 34 of these two frames. When any lever is pressed down, these frames will move up or down to positions that are determined by the adjustment of the tappet 56 on the plunger 54 extending from that particular lever, and as the racks of these frames mesh with the gears 24 and 25 on shaft 9, this

SCHAEFER TUNER
WITH PORTIONS OMITTED
TO SHOW EXTRA PARTS
THAT PREVENT CREEPING



shaft will assume an angular position in accordance with the angular position of the tappet.

Schaefer's tappet, cam or adjustable rocker (whatever one wishes to call it) is easy to adjust and none of the difficulties manifest in the Marschalk device is encountered. But Schaefer uses 18 extra parts to avoid this peculiar behavior, and instead of transferring the angular position of his tappet directly to the rotatable member that is to be angularly positioned, he transmits the neces-

sary movement through the intervening 10 of these 18 additional parts [R. 145-146]. The ten intervening movable parts are the four racks 26, 27, 28 and 29; the four cross bars 31, 32, 33 and 34; and the two gears 24 and 25. The eight guides are of course the "ears" 30—two for each rack.

The Schaefer device was a product of the Zenith Corporation Laboratories. It will be remembered from one of the opening paragraphs of this memorandum that Zenith was one of the first companies to undertake to solve the problems of automatic tuning. The Heath Patent [R. 800], which was filed in 1924, belonged to Zenith, and the Schaefer application was filed four years later [R. 789].

4. The General Motors Rotatable Tappet Tuner Also Involved the Interposition of Extra Parts.

The engineers of the Delco Radio Division of General Motors also worked on the problem of positioning a radio control by means of adjustable tappets. Regarding the project that culminated in the original General Motors adjustable tappet tuner, Plaintiff's Exhibit 3 (later discarded in favor of appellant's structure), plaintiff's expert, Schwarz, explained [R. 410]:

"We started work on this in the latter part of 1936 or the first part of 1937, on the idea of mechanical push button tuners and electrical push buttons for automobile radios."

Between 1936 and the time the Exhibit 3 tuner went into production in 1938 [R. 410], design work on automatic tuners was carried on at the Delco Radio Division by James G. Funk [see Pltf. Ex. YY, R. 31], Howard

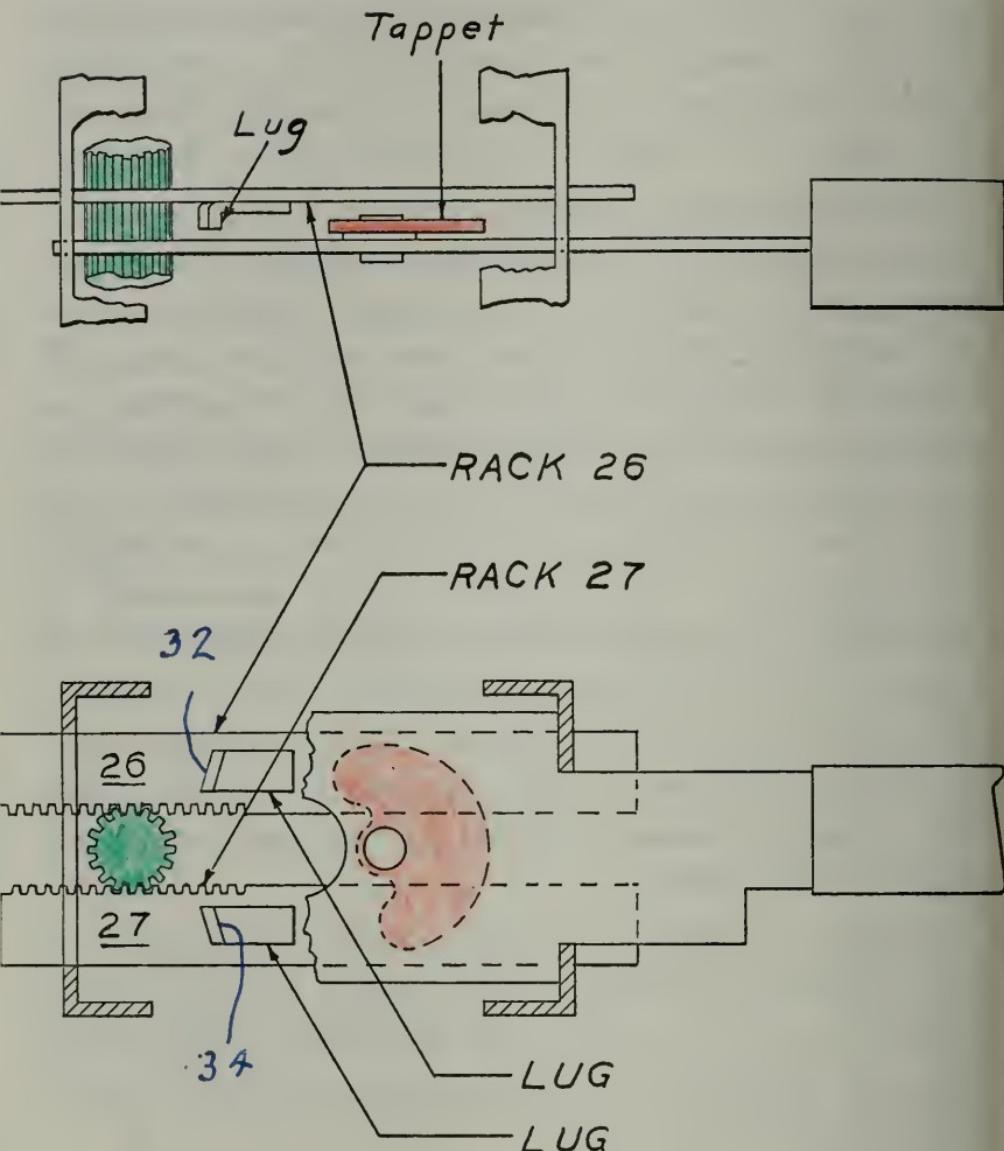
M. Stelzl [Answers to Interrogatories 10 and 12, R. 31-32], William C. DeRoo [Answers to Interrogatories 16 and 18, R. 32-33], and Raymond A. Shuttleworth [Answers to Interrogatories 19 and 20, R. 33], but the final product that went into production was largely devised by Mr. Schwarz [R. 336], who was chief engineer [R. 329].

This final product, Plaintiff's Exhibit 3 tuner, uses adjustable tappets; but instead of these tappets directly engaging the rotatable member as in the Marschalk, Lane & Mackey, and Soffietti tuners, there are four extra parts operatively interposed between each tappet and the rotatable member. In the Zenith-Schaefer tuner, there were ten movable parts operatively interposed between any tappet and the rotatable member, these extra parts requiring eight guides. Mr. Schwarz's simpler arrangement is illustrated on page 30. The rotatable member is the pinion, or gear, shaft shown in green. Unlike Schaefer, Schwarz uses a separate pair of racks for each button or station. One set of racks, 26 and 27, together with the associated manual operating member and tappet, are shown in the figure.

Schwarz explained that General Motors thought it had made an improvement over Schaefer by reducing the number of parts through which the motion is transmitted from the tappet to the rotatable member, or pinion shaft. He testified [R. 337-338]:

“* * * We felt at liberty with our design, *with what we considered some improvements*, because of the existence of the Schaefer tuner, *which we studied at the time* and knowing it was available to us. You have [in the Schaefer tuner] just the two racks on this side and two racks on that side, cooperating by connecting bars, whereas on *our* tuner we have sepa-

TOP VIEW



rate racks for each station, that is, a rack here and a rack there (indicating), and then when you push each one you move the *single pair of racks*. And you have a single pinion going through just as you have a single pinion going through on that one [Schaefer's], or a pinion shaft." (Emphasis added.)

Each of these racks has a lug, or angle bracket, welded to it. The lug on the rack 26 has a projecting portion 32, and the lug on the lower rack 27 has a projecting portion 34. The left end of the operating plunger is broken away in the lower figure to show these lugs more clearly. The tappet (red) is pivoted to the plunger, but is positioned on the opposite side of the plunger from that facing the reader in the lower view. The adjusted tappet may of course be clamped in adjusted position, but the locking or clamping mechanism has been omitted from these figures because we are not concerned with them here. When the button or plunger is pressed in, the tappet (red) will engage the projecting portions of the lugs, as will be evident from the top view. Inasmuch as the lugs are welded to the racks, you move a pair of racks every time you press a button, as Schwarz explained in the foregoing quotation from his testimony.

In this Plaintiff's Exhibit 3 tuner, which was the result of research begun by the General Motors engineers in 1936, there were thus *two* racks and *two* lugs for *each* tappet, and the movement of any tappet had to be transmitted through the associated pair of racks and lugs before reaching the rotatable member. The peculiar flipping around of the tappet (creeping) exhibited in the Marschalk tuner during the adjusting process, of course does not occur in this development of General Motors; but in a *five* button tuner, there are *ten* racks and *ten* lugs—*twenty extra parts*.

D. Appellant's Solution Was Simple and Eminently Satisfactory.

We have discussed five different tuners using adjustable tappets that were developed before Leishman's original patent issued on February 15, 1938. The purpose of the adjustable tappet, of course, is to position the rotatable member.

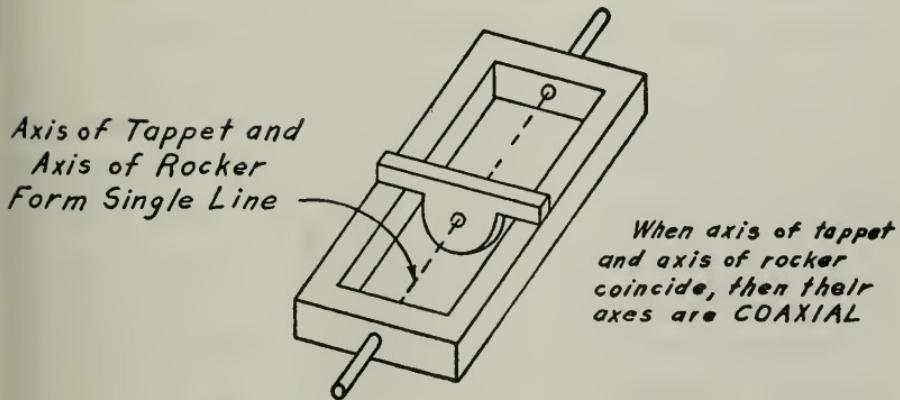
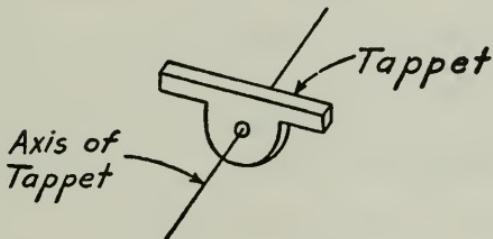
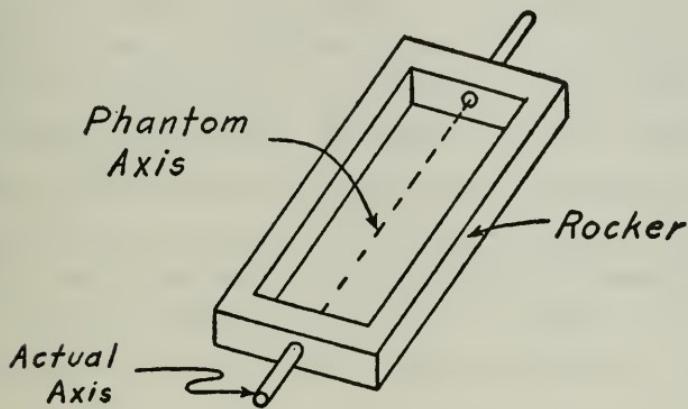
Marschalk brought his adjustable tappet into direct engagement with the positionable rotatable rocker, but serious difficulties arose when his freely pivoted tappet was brought into engagement with the tilted rocker during the adjusting process.

Soffietti also brought his adjustable tappet arrangement into direct contact with the angularly positionable member, and so did Lane and Mackey; but these two tuners avoided the difficulties exhibited in Marschalk's mechanism by providing tappets that were *never* freely pivoted, but which were very difficult and tedious to adjust.

In both the Zenith-Schaefer tuner and the General Motors rack tuner, the tappets were freely pivoted during the adjusting process as in the Marschalk tuner, but the Schaefer and General Motors tuners avoided creeping by interposing extra parts between the tappet and the rotatable positionable member.

Defendant's solution of the problem was very simple, and did not add any extra parts. Like Marschalk, Soffietti, and Lane and Mackey, Leishman used a tappet that directly engaged the rotatable member, but he concluded that the difficulty encountered in this type of structure could be avoided if the axis of the tappet were made coincident with the axis of the rotatable member, or rocker,

when these two parts are in full engagement. Inasmuch as two solid bodies cannot both occupy the same space at the same time, the idea of coincident axes involved providing one of those members with a phantom axis—that is,



having an open space where the axis comes. The rockers of Marschalk, Soffietti and Lane and Mackey, were all solid, and in the Woodbridge cash register a solid shaft extended down the center of the rocker between the side bars. It is obviously immaterial whether the phantom axis is in the rocker or the tappet, but Leishman arranged it in the rocker, which accordingly has an opening in the middle. This is illustrated in the reproduction of Defendant's Exhibit L-4 on page 33. Then he shaped the tappet so that its pivot would set right down inside the rocker in such a way that its axis of rotation would come exactly in line with the axis of rotation of the rocker. The axes of rotation of these two elements then became coincident, or *coaxial*; in other words, they are *on the same line*.

In order that the court might examine the action of the tappet and the rocker more closely, as well as to permit a closer observation of the coaxial relationship, Mr. Leishman prepared a special model with removable parts designated Defendant's Exhibits L, L-1, L-2 and L-3. The rocker L-1 may be placed on the base L so that its axis rests in the grooved supports provided on the base. The tappet L-2, mounted on a short handle, is cut away so that its axis may be moved down inside the rocker. When the tappet is brought into engagement with the rocker by way of the guides that protrude up through the rocker from the base, it will be observed that the axis of the tappet is exactly in line with the axis of the rocker. These axes are then *coincident*, or *coaxial*. The tappet may be lifted up and the rocker tilted to either extreme angular position; and when the tappet is again brought down, there is no tendency for the rocker to turn no matter how much pressure is exerted.

A second tappet, L-3, has been provided, but this L-3 tappet has not been shaped with respect to the rocker for the purpose of providing a coaxial relationship. When this *non-coaxial* tappet is brought into engagement with the *tilted* rocker, it will be observed that the rocker will immediately turn, as in the Marschalk model.⁴

Utilizing this simple relationship of the tappet and rocker, the tappet in an automatic tuner can be loosened and moved into direct engagement with the rocker when the latter is tilted, and the tappet will assume the angular position of the rocker without the slightest tendency for them to turn together no matter how hard one presses on the manual operating member. A model of Leishman's

⁴In the *Associated* case, Judge Harrison apparently misunderstood the nature of the coaxial relationship which these illustrative models clearly show. He was under the impression that the tappet would just naturally become coaxial with the rocker if the tappet were operated by a plunger. He said (36 Fed. Supp. 804 at 809) :

“* * * it seems to me that it would have been very difficult to use a push button or plunger that would not have to pass through the rocker, when the rocker and tappet were brought into full engagement. It was the natural thing to do and in so doing the parts became coaxial.”

This statement contains three demonstrable errors. In the first place, it is not at all difficult to use a push button or plunger that would not have to pass through the rocker. Soffietti [R. 838, Fig. 6] and Lane and Mackey [R. 842, Fig. 3] used plungers that did not pass through the rockers, and the plunger in one of the plaintiff's tuners involved in the present action [Pltf. Exs. LL and NN] likewise does not pass through the rocker. In the second place, passing the plunger through the rocker is *not* the natural thing to do. No one thought of doing it until there had been an opportunity to examine Leishman's arrangement. And in the third place, the passing of the plunger through the rocker does *not* make these parts *coaxial*. If the non-coaxial tappet L-3 is placed in position above the rocker L-1, it can readily be seen that the mere extension of the handle or plunger through the rocker would not make these parts coaxial. Coaxiality is not achieved unless these parts are especially shaped with respect to each other with the idea of a coaxial relationship definitely in mind, as demonstrated by the L-2 tappet which is shaped so that its axis can come into exact alignment with the axis of the rocker.

tuner [Deft. Ex. M] was introduced at the trial, and he demonstrated [R. 162 and 163] that "you can put the rocker in any position you desire and bring this [the tappet] down and there isn't the slightest tendency for the tappet to turn." [R. 163]. The tappet can thus be accurately adjusted without all the difficulties manifest in the Marschalk mechanism, without the tediousness that makes the Soffietti and Lane and Mackey devices hopelessly impractical from a commercial standpoint, and without the eighteen extra parts required in the Zenith-Schaefer device, or the twenty extra parts (ten racks and ten lugs) needed in a five button tuner like General Motors' Exhibit 3.

Having solved the problem of how to make a rocker and tappet combination in which the tappet was easily and accurately adjustable, defendant arranged to combine two sets of these elements in such a way that a single manually operable member could simultaneously move two different tappets each into engagement with a different rocker. This double arrangement made it possible to perform two different tuning operations at the same time. For instance, the sound and the picture for a television program could be sent out on totally unrelated wave-lengths or frequencies, but these two parts of the program could nevertheless be tuned in by a single manual operation.

Leishman's mechanism was described and shown in his original patent No. 2,108,538 [R. 770], as well as in the re-issue of this patent [R. 775], *the drawings and the specifications being absolutely identical in both documents.*

For the convenience of the court, the patent drawings have been reproduced on page 37 of this brief. Fig. 2 shows the tappet 61 (colored red) in full engagement with the rocker 48 (colored green), the latter being connectible

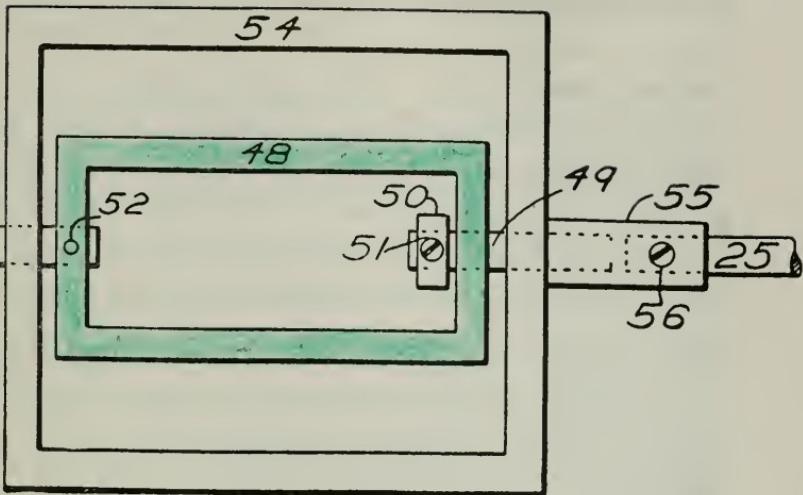


Fig. 1

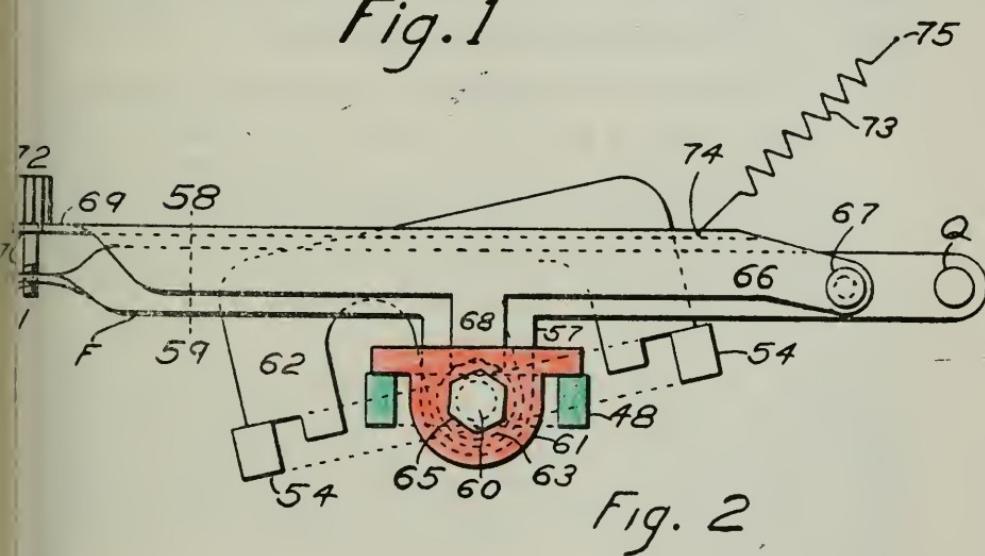


Fig. 2

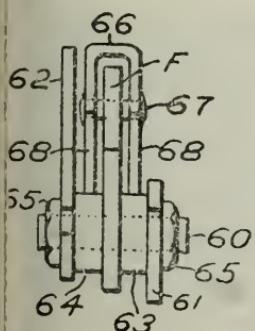


Fig. 3

INVENTOR.

Le Roy J Leishman

to a radio broadcast receiver by means of the shaft S, Fig. 1. It will be noted that Fig. 2 clearly shows the coaxial relationship. The patent points out (page 1, column 1, lines 28 to 30) that another object of the invention is "to make it possible for a single manual operation to tune either a radio set or a television set, or both; . . ." Tappet 62 and rocker 54 may be used for television; but inasmuch as we are here concerned with radio only, the extra tappet and rocker may be disregarded.

In addition to illustrating the coaxial relationship in the drawings, Leishman succinctly described it in the specification. This verbal disclosure will be found in both the original and re-issue patents on page 2, column 1, lines 30 to 34, where the specification reads:

"When the lever assembly is all the way down, it will be observed from Fig. 2 that the pin 60 [around which the tappet is pivoted] is substantially *coaxial* with the rockers 48 and 54, which means that in this position it is also *co-axial* with shafts S, 49 and 25, shown in Fig. 1." (Emphasis added.)

During the prosecution of appellant's original patent, he called the attention of the Patent Office to the fact that the construction just described arrived at Schaefer's result with 18 less parts. This was done in a letter dated August 28, 1937, which appears in the file wrapper [Deft. Ex. P]. Leishman stated:

". . . no engineer would use eighteen inter-related parts if ordinary engineering skill would make it obvious that one part would do the work. Furthermore, thousands of Schaefer's devices were manufactured and widely used, and engineers were employed to simplify the construction. This is additional evidence that applicant's improvement is an invention

entitled to protection within the scope of the claims.”
[R. 1023.]

The Patent Office thought so too.

“Cheapness of construction, simplicity of construction, and operation and ease of operation as compared with prior structures are all indications of invention.”

Walker on Patents, Deller’s Edition, Vol. 1, p. 189.

When Leishman told the Patent Office in August, 1937, that “thousands of Schaefer’s devices were manufactured and widely used, and engineers were employed to simplify the construction” he did not know that engineers were even then being employed at General Motors for that very purpose, these engineers being unaware that the problems had already been solved.

General Motors’ improvements over Schaefer fell far short of Leishman’s. This great corporation, which knows a good thing when it sees it, has accordingly abandoned the results of its own research [R. 336] and adopted Leishman’s construction. General Motors’ engineer Schwarz admitted that *one million* tuners with coaxial tappets and rockers had been used prior to the time of the trial [R. 414-415] in Chevrolet, Pontiac and Buick cars alone.

Beginning in 1938, after a knowledge of appellant’s structure became available to the public, one manufacturer after another placed tuners upon the market containing tappets and rockers that were coaxial in the completely engaged position [R. 220-230]. Household sets using this construction included the following [R. 655-656]:

Crosley sets, manufactured by The Crosley Corporation;

Emerson sets, manufactured by Emerson Radio Corporation;

Packard-Bell sets, manufactured by Packard-Bell, Los Angeles;

Mission-Bell sets, also manufactured in Los Angeles;

Gilfillan sets, manufactured by Gilfillan Bros., Inc., of Los Angeles;

Sets made by Radio Corporation of America;

Trav-ler sets;

Silvertone sets, made for Sears-Roebuck by Colonial Radio Corporation;

Arvin radio sets, made by Noblitt-Sparks;

Admiral radio sets, made by Continental Radio and Television Corp.;

Magnavox radios;

Stromberg-Carlson radio receivers;

Detrola radio receivers;

Radio receivers made by Clinton Manufacturing Co., of Chicago;

Radio receivers made by Warwick Mfg. Co. of Chicago;

Stewart-Warner radio receivers;

De Wald radio receivers; and

Troy radio receivers.

In the automobile field, appellant's tuner has been equally successful. His coaxial tappet and rocker construction is used in more automobiles that are factory-equipped with radios than all other types combined.

The line of Chrysler cars that were current at the time of the trial, used two different types of tuners, one of which was of the coaxial tappet and rocker construction. This tuner [Deft. Physical Ex. AAA] is described in the folder identified as Defendant's Physical Exhibit BBB, which says that the said tuner is used in the current *series* of Plymouth, Dodge, DeSoto and Chrysler passenger cars and Dodge trucks, as well as in the 1941 and 1942 models of these cars.

At the time of the trial, current models of Hudson, Mercury and Lincoln cars and Ford trucks were using the tuner identified as Defendant's Physical Exhibit GGG. This is a coaxial tappet and rocker tuner manufactured by Zenith Corporation. The use of this tuner in the Hudson car is confirmed by the factory folder introduced as Defendant's Physical Exhibit CCC, and the use of the same tuner in Ford trucks is confirmed by the service manual in evidence as Defendant's Physical Exhibit DDD. The service manual identified as Defendant's Physical Exhibit EEE verifies that the same tuner is used in Lincoln and Mercury cars.

The Zenith Corporation, which manufactures the tuners just mentioned for Hudson, Ford, Mercury and Lincoln, has had longer and wider experience with automatic tuners than any other manufacturer; and its final conclusion as to their relative merits consequently has great weight. It was Zenith that fought the long interference over the Heath patent that was applied for in 1924 [R. 800]; it was Zenith that manufactured the Schaefer tuner with the

18 extra parts that avoided creeping. After appellant's simpler construction became available, Zenith purchased coaxial tappet and rocker tuners from Leishman's licensee [R. 225-226], and a tuner of this type especially made for Zenith and bearing the number of the patent here at issue is in evidence as Plaintiff's Physical Exhibit FF. Zenith later experimented with other types, but then began manufacturing the coaxial tappet and rocker tuner just discussed for Hudson, Ford, Lincoln and Mercury. On May 1, 1948, just before the trial of this suit, Zenith issued a bulletin about this tuner [R. 1140], saying: "The new 1948 line of Zenith auto radios employs a simplified push-button system of automatic tuning in place of the solenoid driven turret mechanism used in previous models. *This system is so simple and fool proof, that complete replacement should seldom, if ever, be necessary.*"

Seldom in the history of the patent system has there been such immediate and widespread adoption of a new invention. Appellant thus succeeded well in achieving the object set forth in his original and reissue patents [R. 771 and 777, column 1, lines 30-33]: "*to afford means whereby the apparatus may easily be adjusted* so that a definite manual operation will cause the desired rotatable element to be turned to a desired position." After ten years it is still preferred, because "*This system is so simple and fool proof*"—to use the words just quoted from the Zenith announcement.

III.

SPECIFICATION OF ERRORS RELIED UPON.

1. The district court erred in finding that claims 7, 8, 9, 10 and 11 of United States Reissue Letters Patent No. 20,827 are invalid and void.

2. The district court erred in making Finding 8 to the effect that "Every element, feature and mode of operation of the tuner of the patent in suit is anticipated in the light of the teachings of Marschalk, Patent No. 2,072,897 and Schaefer, Patent No. 1,906,106."

The Marschalk device referred to in this finding is the one that was used at the trial to demonstrate the very difficulties that everybody had to solve (see p. 19 hereof), and the Schaefer patent is the one that discloses the Zenith device [Defendant's Physical Exhibit H] in which ten movable parts were interposed between the adjustable tappet and the rotatable element that is to be positioned. These ten movable parts had eight guides. The statement that "Every element, feature and mode of operation of the tuner of the patent in suit is anticipated in the light of the teachings of the Marschalk Patent No. 2,072,897 and Schaefer, Patent No. 1,906,106," is thus obviously in error.

3. The district court erred in stating, in Finding 9, that "the co-axial characteristic of the patented tuner is anticipated by said Schaefer patent"

It should be obvious from a casual glance that there is no coaxiality in the Schaefer mechanism. (See p. 27 hereof.) The Schaefer tappet 56 of course has an axis at the pivot 55. The only other axis in the Schaefer mechanism is the axis of the shaft 9 shown in Schaefer's pat-

ent in Figs. 3 and 4 [R. 789-790]. But these axes are far from *coincident*, or *coaxial*. The axis 55 of the tappet 56 and the axis of the shaft 9 are more than $1\frac{1}{2}$ inches apart even in these patent drawings. The perspective drawing of certain parts of the Schaefer mechanism on page 27 hereof may also be helpful in showing the wide separation of these axes of rotation, which are the only such axes in the Schaefer structure. Any reference to a coaxial characteristic in the Schaefer tuner, such as the reference in Finding of Fact 9, is thus manifestly in error. The axis of Schaefer's tappet, instead of being coaxial with the axis of the rotatable member 9, was widely separated therefrom.

4. The district court erred in stating, in Finding 9, that the "function and mode of operation" of the Schaefer device "is identical with that of the patented tuner."

Schaefer's "mode of operation" in the elimination of creeping is entirely different from, rather than identical with, that of the patent in suit. That Schaefer eliminated creeping by the interposition of 10 movable parts between his tappet and rotatable member, was thoroughly demonstrated at the trial [R. 143-148] and the testimony was not disputed.

5. Findings 8, 9 and 10, and the portions of the opinion upon which they are based, have no support whatever in the record, and are contrary to all the expert testimony with respect to the Schaefer and Marschalk devices, which said testimony was undisputed.

6. Findings 10, 11 and 12, together with the portions of the opinion upon which they are based, are unwarranted assumptions unsupported by the record.

7. Finding 13 is both incorrect and irrelevant (1) because the Cunningham mechanism is a device for recording the amount of flue gas in a container and is completely non-analogous, (2) because parts of the Cunningham device that were essential to its normal mode of operation were omitted from the model alleged to represent the Cunningham mechanism, (3) because the part which appellee calls the "tappet" in the Cunningham device, never has to be set to conform to the angular position of the rocker, (4) because the method by which appellee's expert endeavored to set the so-called tappet in the model was entirely different from the method that needed to be employed in Cunningham's device, and (5) because the problem that was solved by the patent in suit was one that never arose in the non-analogous art to which the Cunningham device belongs. Appellee's own expert MacKeown admitted most of these things in his cross-examination.

8. Finding 14 is in error for the reason that the Cunningham patent is from a different and non-analogous art not encountering the problem that was solved by the patent in suit.

9. Finding 15 is clearly in error, because a device from a non-analogous art having different problems does not anticipate, especially where its structure has to be altered and its normal mode of operation changed to make it appear pertinent.

10. The court erred in stating in Finding 16 that "Were Leishman the first to advantageously employ the mechanical principle of coaxiality in the function of radio tuning devices such employment would be nothing more than a new use *per se*." If this finding is meant to imply

that appellant's use of this relationship for a totally new purpose would render his combination unpatentable, then this finding is contrary to all pertinent law. As this Honorable Court said in *Pointer v. Six Wheel Corp.*, 177 F. 2d 153, 160, ". . . invention cannot be defeated merely by showing that, in one form or another, each element was known or used before." (Citing many decisions.)

11. The court erred in not holding that the claims at issue are valid.

12. Inasmuch as Judge Mathews, writing for the court in *Leishman v. Associated Wholesale Electric Co.*, 137 F. 2d 722, 727, 728, specifically wiped out the lower court's holding that the claims here at issue were invalid for want of invention, the district court in the instant case erred in stating that "there are rather significant expressions in the opinion of Judge Mathews, writing for the court in *Leishman v. Associated Wholesale Electric Co.*, *supra*, that induce at least a surmise that our own Appellate Court had its misgivings as to any inventive qualities in the claims of the patent in suit." The portion of the *Associated* decision which the lower court quoted in support of this statement, makes no reference whatever to the subject of invention.

13. The district court erred in attaching so much weight to the opinion of the Court of Appeals for the Tenth Circuit in *The Richards and Conover Company v. Leishman*, *supra*, which said Court of Appeals was demonstrably in error in reversing the U. S. District Court for the Western District of Oklahoma in its holding that the claims here at issue are valid.

14. The district court erred in denying both Defendant's Motion under Rule 52b to Amend the Findings,

Conclusions and Judgment, and Defendant's Motion for a New Trial under Rule 59.

15. Inasmuch as the final opinion of the Court of Appeals for the Tenth Circuit in *The Richards and Conover* case, rendered subsequent to the trial herein, was based upon new grounds raised *for the first time* in the said appellate court's own opinion, the district court in the instant case was wrong in refusing to grant a new trial for the purpose of introducing evidence to show that said *new* grounds were baseless and should not be followed here.

16. Inasmuch as Defendant's Motion for a New Trial was supported by affidavits from the professors of mechanical engineering at California Institute of Technology and the University of Southern California, and also from the head of Engineering Research, Department of Engineering, at the University of California at Los Angeles, which said affidavits unanimously stated that the opinion of the Court of Appeals for the Tenth Circuit, *supra*, was based upon erroneous conceptions of mechanical principles and faulty drawings, the district court in the instant case should have granted the defendant a new trial to permit him to present evidence to refute the erroneous conclusions of the Court of Appeals for the Tenth Circuit with respect to invention, which conclusions have improperly been adopted herein.

17. The district court erred in not deciding the issue of validity according to the formulas recommended by the Supreme Court and by this Honorable Court of Appeals for the Ninth Circuit.

18. The district court was wrong in stating, in its opinion, that the defendant argued that the court should broaden the claims to cover tuners not operated by levers,

whereas, actually, the defendant constantly and consistently argued that the claims should not be narrowed to lever-operation, and should be interpreted literally. As the Court of Appeals for the Tenth Circuit said in *The Richards and Conover Company v. Leishman*, 172 F. 2d 365, 368:

“However, claims 7 to 11, inclusive, embrace a single rocker and corresponding adjustable tappets mounted on pivots, means for moving each tappet so one of its sides engages one arm of the rocker and rotates the rocker until the other side of the tappet engages the other arm of the rocker, and *they do not specifically embrace a lever means for carrying and moving the tappets.*” (Emphasis added.)

19. The court erred in not holding that both of the plaintiff’s accused tuning devices are infringements of the claims here at issue.

IV. ARGUMENT.

A. Introduction to the Argument.

The present record is full of evidence of the long failure of skilled workers to arrive at appellant’s simple solution of the creeping problem. The Supreme Court says that such failure is evidence of invention. In *Remington Rand Business Service, Inc. v. Acme Card System Co.*, 71 F. 2d 628, 632, the Court of Appeals applied and explained this Supreme Court formula as follows:

“This history is persuasive, for Rand, *who is well described as a ‘man skilled in the art,’ failed to obtain the excellent results which Powell achieved.* We have no difficulty in approving the conclusion of the

District Judge that Powell's discovery amounted to invention. *The decisions of the Supreme Court and of the several circuits are replete with illustrations of similar situations in which it has been held that one who in the practical application of an art has found that which eluded the search of other skilled men is entitled to the grant of a patent.* Diamond Rubber Co. v. Consolidated Tire Co., 220 U. S. 428, 434, 31 S. Ct. 444, 55 L. Ed. 527; United States Industrial Chemical Co. v. Theroz Co. (C. C. A.) 25 Fed. (2d) 387; Gulf Smokeless Coal Co. v. Sutton, Steel & Steele (C. C. A.) 35 F. (2d) 433; Julius Levine & Co. v. Automatic Paper Machinery Co. (C. C. A.) 63 F. (2d) 547; Wahl Clipper Corporation v. Andis Clipper Co. (C. C. A.) 66 F. (2d) 162; White Co. v. Converse (C. C. A. 20 F. (2d) 311; Johnson v. Forty-Second Street, M. and St. N. Ave. R. Co. (C. C.) 33 F. 499, 501." (Emphasis added.)

Recognizing substantially the same test, this Honorable Court of Appeals for the Ninth Circuit expressed itself as follows in the *Six Wheels* case, *supra*, at page 160:

"A test which has been found very useful and generally followed is that adverted to by Mr. Chief Justice Taft in the case just referred to,—namely, the discovery of the source of the difficulty and the application of a remedy not thought of before. Eibel Process Co. v. Minnesota and Ontario Paper Co., *supra*, 261 U. S. at page 66."

It has already been amply demonstrated that appellant was the one who discovered the real source of the "creeping" difficulty and applied a remedy *not thought of before*.

When the lower court rendered its decision in the instant case, this Honorable Court had not yet given its

opinion in the *Six Wheel* case, but the same doctrine there expounded had already been well established in this circuit as shown in *Johnson Co. v. Philad Co.*, 96 F. 2d 442, where the following appears at page 444:

“The evidence shows that the Mayer process solved the problem confronting hair dressers by providing a practical method of applying a permanent Croquignole wave to the human head. As we have said, the essence of the invention was applying clamps to the hair before winding. *Although this step was simple, it apparently was not obvious to those skilled in the art of hair dressing and the introduction of the patented method met with immediate and substantial commercial success. Solving such a problem in a practical manner constitutes invention.* (Emphasis added.)

Why didn’t the lower court apply these tests to the long failure of others in the instant case? The lower court does not make it clear whether it understood the problem involved in providing a simple, adjustable tappet tuner, and that the practical solution was found in making the rotational axis of the tappet coaxial with the axis of the rotatable member that is to be positioned. Nowhere in the opinion is it mentioned that Leishman was striving to provide a simple tuner that was easy to adjust. Nowhere is any reference made to the long failure of others.

It is apparent that the lower court’s opinion was influenced primarily by the decision of the Court of Appeals for the Tenth Circuit in *The Richards and Conover* case, *supra*, rather than by the record before it. Scant reference is made in the opinion to the evidence in the instant case. Such reference is confined to the portion of the

decision extending from the bottom of page 46 to the middle of page 48 of the present record; and findings of fact 8, 9, 13, 14 and 15 are based upon this portion of the opinion.

- B. The Lower Court Relied Upon the Marschalk, Schaefer and Cunningham Devices as Anticipations of Appellant's Solution, but the Lower Court's Findings With Respect to These Devices Are Clearly in Error.
1. Marschalk, Instead of Anticipating Defendant's Simple Solution, Exhibited the Creeping Difficulties in His Device and Left the Problem Completely Unsolved; and Schaefer, Instead of Anticipating Defendant's Simple Solution, Used 18 Extra Parts for the Purpose.

Finding 8 reads as follows [R. 52]:

“Every element, feature and mode of operation of the tuner of the patent in suit is anticipated in the light of the teachings of Marschalk, Patent No. 2,072,897, and Schaefer, Patent No. 1,906,106.”

This finding is based upon a single sentence of the Opinion [R. 46], which reads as follows:

“Moreover, we think independently that under the record before us and in the light of the teachings of the Marschalk Patent No. 2,072,897, and the Schaefer Patent No. 1,906,106, every element, feature and mode of operation of the Leishman combination in suit is anticipated.”

Appellant believes that it has been made abundantly clear in foregoing portions of this memorandum that the Marschalk device here referred to was the one that has been used to demonstrate the very difficulties that everybody had to solve, and the Schaefer patent is the

one that discloses the Zenith device [Deft. Physical Ex. H] in which ten movable parts were interposed between the adjustable tappet and the rotatable element that is to be positioned. These ten movable parts had eight guides. The statement that "in the light of the teachings of the Marschalk Patent No. 2,072,897, and the Schaefer Patent No. 1,906,106, every element, feature and mode of operation of the Leishman combination in suit is anticipated," is thus so obviously in error that no argument seems necessary to show that such is the case.

If the teachings of Marschalk and Schaefer anticipate every element, feature and mode of operation of appellant's combination, it is difficult to see why General Motors Corporation didn't arrive at the coaxial rocker and tappet structure when it was trying to simplify the Schaefer device. Schwarz stated [R. 337]: "We felt at liberty with our design, with what we considered some improvements, because of the existence of the *Schaffer tuner*, which we studied at the time and knowing it was available to us." There is thus no question but what the General Motors engineers had the light of the teachings of the Schaefer patent shining right on their drafting boards.

The Marschalk patent issued on March 9, 1937, while General Motors was struggling with the problem of simplifying the Schaefer structure. Schwarz testified [R. 410]: "We started work on this in the latter part of 1936 or the first part of 1937 . . ." It is inconceivable that the giant General Motors Corporation, when working on a research problem, would not be aware of the patents that were issuing at the time. This Honorable Court knows that it is customary in these patent-conscious organizations to keep abreast of patents issuing in the field of their research. However, if General Motors

did not actually know of the Marschalk patent, it is nevertheless charged with such knowledge.

“Having all these various devices before him, and, whatever the facts may have been, he is chargeable with a knowledge of all preexisting devices. . . .”
Most, Foos & Co. v. Stover Mfg. Co., 177 U. S. 485, 493 (1900).

The Supreme Court also adhered to this doctrine in *Sontag Chain Stores Co., Limited v. National Nut Co. of California*, where the court said, 310 U. S. 281 at page 295:

“All patents must ‘be recorded, together with the specifications, in the Patent Office in books to be kept for that purpose.’ U. S. C. A. Title 35, sec. 39. *Constructive notice of their existence goes thus to all the world.* Boyden v. Burke, 1852, 14 How. 575, 582, 14 L. Ed. 548; Wine Ry. Appliance Co. v. Enterprise Ry. Equipment Co., 1936, 297 U. S. 387, 393, 56 S. Ct. 528, 529, 80 L. Ed. 736; *Walker on Patents, Deller's edition* (1937) Vol. 3, p. 2176.”
(Emphasis added.)

Even if the Marschalk device had been right in front of Schwarz and his fellow engineers it would not have been in the least helpful. Marschalk used an adjustable tappet, but so did Schaefer. Marschalk thus added nothing over Schaefer in this respect. Marschalk, of course, brings his tappet into direct engagement with the rotatable member, as does Leishman, but that is the way it was always done until Schaefer isolated them and interposed the ten movable parts. The tappet was brought into direct engagement with the rotatable member in the 1883 Kettell clock-setting mechanism described on pages

14 and 15 hereof. The tappet was also brought into direct engagement with the rotatable member in the 1897 Woodbridge cash register mechanism [R. 713] described on page 16 of this memorandum and mentioned in the portion of Judge Harrison's opinion in the *Associated* case, *supra*, quoted on page 17 hereof. Schaefer and the General Motors engineers, in fact, were the only engineers of record that separated the tappet from the rotatable member. The Soffietti and Lane and Mackey devices, which were developed concurrently with the General Motors rack tuner, both brought their tappets into direct engagement with the rotatable member, as shown in the descriptions of their devices in the portions of this memorandum extending from page 23 to page 25.

Nothing in the Marschalk patent teaches that the tappet and rocker must be mutually shaped and arranged so that their axes of rotation become coincident, or coaxial, in the completely engaged position. Nothing in Marschalk's device suggested a solution of the creeping problem to Marschalk himself, for he left the problem completely unsolved.

Finding 8 is thus manifestly in error in its statement that "in the light of the teachings of the Marschalk Patent No. 2,072,897, and the Schaefer Patent No. 1,906,-106, every element, feature and mode of operation of the Leishman combination in suit is anticipated."

This completely untenable finding must thus be set aside.

2. Schaefer's Axes, Instead of Being Coaxial, Are Much Further Apart Than Marschalk's; and the Testimony That Schaefer Eliminated Creeping by Interposing 10 Movable Parts With 8 Guides, Was Undisputed.

Finding of Fact 9 reads:

"The coaxial characteristic of the patented tuner is anticipated by said Schaefer patent, whose function and mode of operation is identical with that of the patented tuner."

Perhaps we had better be sure that we know what the terms *coaxial* and *coaxiality* mean. Webster's New International Dictionary, unabridged, defines coaxial as "having coincident axes." Schwarz' understanding of the meaning of the term *coaxiality* is disclosed in the following excerpt from his testimony [R. 428]:

"Q. That is, when there is more than one axis, and they come into alignment, then the relationship between the two axes is that which might be termed coaxiality, is that right? A. Yes, I believe that is the definition."

There must accordingly be *two axes* before there can be coaxiality, and these axes must be *coincident*, or *in alignment*. It should then be obvious from a casual glance that there is no coaxiality in the Schaefer mechanism. Not only is there no "coaxial characteristic" in the Schaefer device, but its method of eliminating creeping is entirely different from, rather than identical with, that of the patent in suit. That Schaefer eliminated creeping by the interposition of 10 movable parts between his tappet and rotatable member, was thoroughly demonstrated at the trial [R. 143-148] and the testimony was not disputed.

The Schaefer tappet, of course, has an axis. The other axis in the Schaefer mechanism is the axis of the shaft 9 shown in Schaefer's patent in Figs. 3 and 4 [R. 789-790]. But these axes are far from *coincident*, or *coaxial*. The axis 55 of the tappet 56 and the axis of the shaft 9 are more than 1½ inches apart even in these patent drawings. The perspective drawing of certain parts of the Schaefer mechanism on page 27 hereof may also be helpful in showing the wide separation of these axes of rotation, which are the only such axes in the Schaefer structure. Any reference to a coaxial characteristic in the Schaefer tuner, such as the reference in Finding of Fact 9, is thus manifestly in error. Schaefer's tappet, instead of being coaxial with the axis of the rotatable member, was widely separated therefrom; in fact, it was by operatively interposing ten movable parts between these two separated axes that Schaefer prevented creeping.

In view of the demonstrated errors in Findings 8 and 9, these findings must certainly be disturbed by this Honorable Court, and the lower court must be reversed in its holding that Marschalk and Schaefer in any way anticipated appellant's coaxial rocker and tappet structure.

3. The Cunningham Device, Held to Be an Anticipation, Is From a Remote, Non-analogous Art Having Different Problems, and It Cannot Be Made to Function as an Automatic Tuner Without Changes and Omissions Rendering It Useless for Its Original Purpose.

The irrelevant and non-analogous nature of the Cunningham device, mentioned in Findings 13, 14 and 15, was disclosed by appellee's own expert at the very beginning of his direct examination regarding Cunningham. The second question and answer were as follows:

“Q. Will you please explain the shaft positioning mechanism, if any, in the Cunningham patent? A. Yes. This Cunningham patent is a device for determining the amount of carbon dioxide in flue gas so that automatic determination of the carbon dioxide can be used to record or control the combustion, say in a furnace.” [R. 449-450.]

Such a device is about as foreign to appellant's device as anything could possibly be. Certainly the measurement of flue gas is more remote from radio tuning than was the “bogie,” or railroad, art from the automobile truck art in the *Six Wheel* case, *supra*. Yet this Honorable Court referred to the bogie art as “*a different, non-analogous art, with different problems.*” [177 F. 2d at page 162.]

It was the fact that the bogie art had *different problems* from those that were solved by Knox's device, that made the bogie art *non-analogous*.

We can immediately determine whether the Cunningham device has any pertinence by ascertaining whether it was a mechanism that encountered the problem that appellant solved. Was it a device in which parts tended to move when there should be no rotation at all? Was the unwanted movement eliminated by making the axes of the offending parts coaxial?

The unwanted movement in a radio tuner occurs during the adjusting process when the loosened tappet is being adjusted to the position of the rocker. Appellee's expert Mackeown found parts in Cunningham's device [R. 742] that bear a superficial resemblance to a tappet and rocker. Moreover, this “tappet” has to be adjusted. But this “tappet” is *never* adjusted to the position of the rocker. It is adjusted to conform to the position of a float that is

raised by the pressure of the flue gas, and this adjustment must take place while the "tappet" is raised out of engagement with the rocker. Whenever the "tappet" is in contact with the rocker, the tappet is firmly clamped against any possible movement. The "creeping" problem thus never arises.

Cunningham's complete mechanism is shown on page 741 of the record. The float that is raised by the flue gas appears in the center of Fig. 1, and is designated by the numeral 38. Cunningham uses a series of interconnecting parts to position the recording pen 62 in Fig. 2 in accordance with the height of this float 38, shown in Fig. 1. The parts which appellee has isolated as an alleged anticipation of appellant's tuner are a portion of this series, and they may be seen in Fig. 1 above the float. Independent views of these parts are shown on page 742.

The wheel 55 with the pegs 56 on page 742 is what appellee's expert Mackeown identifies as the tappet, and the member 57 is the rocker. Dr. Mackeown denominates this wheel as the tappet in the following excerpt from his testimony [R. 450-451]:

"The hammer, 43, is rigidly connected to the wheel 55, and which has the two pins, marked in Figure 5, so that the position of this wheel or *tappet* is positioned by the position of the hammer 43." (Emphasis supplied.)

If Cunningham's "tappet" 55 is never adjusted in accordance with the position of the rocker, then Cunningham never encounters the problem that arises in an automatic tuner when the loosened tappet is brought into engagement with the rocket for adjustment purposes.

Appellee's expert Mackeown had to agree that Cunningham never sets his wheel 55 in accordance with the position of the rocker [R. 469]:

"Q. Cunningham never sets his wheel 55, in accordance with the position of the rocker 57, does he?

The Witness: May I have that question again?
(Question read.)

A. Not for the purpose he uses the shaft positioning apparatus described."

To make it doubly clear that Cunningham's type of mechanism could never encounter a situation in which creeping could occur, let us ascertain from Dr. Mackeown what it is that *sets* or determines the adjusted position of his "tappet" wheel 55:

"Q. Now, in Cunningham the wheel 55, has its angular position determined by the position that the hammer, 43, assumes as shown in Figure 6, is that right? A. That is the way it is described in the patent, yes." [R. 469.]

So the position of Cunningham's tappet is determined by the position of the hammer 43, and not by the rocker. And it will be noted in Fig. 6 that the hammer 43 determines this by the height of the rod 40 while the round pegs on the "tappet" wheel *are completely disengaged from the rocker.*

Cunningham's device is thus *not* one in which the loosened tappet is brought into engagement with the rocker for adjustment purposes. It is only during such adjustment that "creeping" could occur. The Cunningham device therefore cannot be urged as an earlier device which presented a "creeping" problem that was solved in the way that appellant solved it.

Appellee's idea of urging the Cunningham gas measuring device as an anticipation undoubtedly stems from the fact that the wheel 55 carries pegs 56 that engage the rocker 57 when the wheel is lowered, as shown in Fig. 9 (page 742), and the center of wheel 55 is then in line with the axis of the rocker. In this position, the center of the wheel 55 is not an axis, because the wheel is *not rotatable* in this position. Dr. Mackeown also admitted this [R. 468]:

"Q. And by the time the wheel 55 reaches the coaxial position or before that, the wheel is restrained against all rotation, isn't it? A. That is the method described in measuring flue gas.

Q. And that is what happens with the Cunningham device—what you may term as the equivalent to the tappet is firmly engaged and restrained by the arcuate portion of the lever 51, before it ever gets into contact with the rocker 57, isn't that so? A. That is true provided it is actuated by the push rod 45."

Cunningham's device is *always* actuated by the push rod 45, and it is *always* used for measuring gas. Consequently the "tappet" wheel 55 is *always* clamped against any possible rotation whenever its pegs are in contact with the rocker. Since this so-called tappet wheel is *never free to turn* when in contact with the rocker, no situation arises in the operation of Cunningham's device that is analogous to the situation in which creeping occurs in an automatic tuner. Cunningham had no problem such as that solved by appellant's structure.

Dr. Mackeown's inferences that Cunningham's device might be operated in some other way than by the push rod 45, and for some other purpose than the measurement of

flue gas, are not based upon any disclosure in Cunningham's patent, but are references to a made-over model of Cunningham's device [Pltf. Ex. 11] which the plaintiff altered so that it could be operated *in a different way than by the push rod 45*, and *for a different purpose than the measurement of flue gas*. The plaintiff omitted the parts which Cunningham used to operate his mechanism, including the push rod 45; and the plaintiff also omitted all the parts which were necessary for the adjustment of Cunningham's "tappet" wheel in the *raised* position in which it had to be adjusted in order to serve Cunningham's purpose.

These alterations were so great that they were gradually conceived over a period of years by those opposing the patent.

"Q. (By Mr. Flam): Dr. Mackeown, when was that model made, Plaintiff's Exhibit 11? A. Well, it was made excluding the gear mounted on the shaft, corresponding to shaft 58 of the patent, and the tuning unit. *The rest of the metal parts were made prior to the Associated case . . .*" [R. 472, emphasis added.]

The *Associated* case, of course, was tried in 1940.

"Q. When was the condenser and the gear added to that model? A. Oh, *something about a year ago.*" [R. 472, emphasis added.]

"Q. The model, Exhibit 11, has no hammer or anything like that on it. When was that taken off of the model? A. Oh, that was taken off *a few days ago*. It served no purpose in tuning a radio or positioning a tuning condenser of a radio set.

Q. But it was a very important feature of the Cunningham device, was it not, to adjust the wheel in accordance with the float? A. It was used for

the purpose indicated in the Cunningham patent, 1930192, to position the wheel 55.

Q. Wasn't that a very important part of the Cunningham device, to position that wheel? A. If you use it for measuring flue gas I think it would be, as Cunningham did, but not if you adapt this device for tuning a radio condenser." [R. 474.]

A device from another art that has to be altered to simulate a later structure, is not an anticipation.

"It is not sufficient to constitute an anticipation that the device relied upon might, by modification, be made to accomplish the function performed by the patent in question, if it were not designed by its maker, nor adapted, nor actually used, for the performance of such functions." *Topliff v. Topliff*, 145 U. S. 156, 161.

Even with all the changes made by appellee and others, the "tappet" of the revised structure could not be set without employing an involved method which was an entire departure from the one that was essential to Cunningham's gas measuring purposes; and if the hammer 43 had not been removed, the "tappet" would have lost its adjusted position as soon as Dr. Mackeown removed his finger. As Dr. Mackeown himself explained [R. 450-451]: "*The hammer, 43, is rigidly connected to the wheel 55 . . . so that the position of this wheel or tappet is positioned by the position of the hammer 43.*" (Emphasis added.) The hammer does this by falling of its own weight until it rests upon the top of the rod attached to the float. This normal function of the arm 44 and screw 43, which Dr. Mackeown calls a "hammer," is explained by Cunningham at the top of page 745, lines 1 to 7, as follows:

“Downward movement of the lever 51 lowers the loop 59 thus allowing the contact screw 43, carried by arm 44, to contact by its own weight with and rest upon the tappet 41 [the cap 41 on top of the rod attached to the float], as illustrated in Fig. 6, this movement of the arm rotating the wheel 55 to fix the position of pins 56.” (Emphasis and parenthetical explanation added.)

If this “hammer” or screw 43 had not been removed on the revised model, its weight would thus have rotated the wheel as soon as Dr. Mackeown took his finger away.

Appellee's changes in the structure and in the mode of operation of Cunningham's device, really amounted to a complete departure from the theory of its operation—or from what the Supreme Court has referred to as “the law of the structure.” This reference was made in the case of *Clough v. Barker*, which is very illuminating on this matter of changing the manner of operation of prior art mechanisms to simulate later devices. It is particularly pertinent in the present instance:

“The testimony as to any additional or supplementary supply of gas in the Horace R. Barker burner amounts really to this only,—that if that burner is used now in a way in which it was never designed to be used, and is not shown to have ever been used before Clough's invention, it may be made to furnish a supplementary supply of gas. Its structure was such that, to give full effect to its mode of operation, the surrounding-tube did not require ever to be raised so high as not to be in contact with the cone. * * * Any further raising of the tube was accidental, and not a part of the law of the structure. * * * Any raising of the tube unnecessarily high, so as to admit of a flow of gas through an orifice

between the tube and the cone to the flame, cannot be regarded as amounting to an invention of what Clough invented. *The structure was not designed for the same purpose as Clough's, no person looking at it or using it would understand that it was to be used in the way Clough's is used, and it is not shown to have been really used and operated in that way.*" (Emphasis added.) *Clough v. Barker*, 106 U. S. 166, 175-176.

In the instant case, appellee not only changed *the law of the structure* but found it necessary to make substantial alterations in the mechanism in order to do so. And appellee did all this with a device from a very remote art which no one would ever look at and think that it had any possible pertinence to the problems of automatic tuning.

If it had occurred to anyone seeing Cunningham's mechanism that it might have some pertinence to the problems of automatic tuning, and if such person had been able to make all the changes necessary to adapt it to such use, the original inspiration and the making of these changes would in themselves amount to invention. In *Hobbs v. Beach*, 180 U. S. 383, 392, the Supreme Court said:

"It appears from the testimony that several of these addressing machines, of which that of Dennis and York is a type, and which are claimed now to have inspired the Beach patent, had been upon the market for many years, and yet it never seems to have occurred to any one engaged in the manufacture of paper boxes that they could be made available for the purpose of attaching strips to the corners of such boxes. This very fact is evidence that the man who

discovered the possibility of their adaptation to this new use was gifted with the prescience of an inventor.” (Emphasis added.)

In its decision in the *Six Wheels* case, *supra*, in which the railroad, or “bogie” art was held to be non-analogous to the automobile truck art, this Honorable Court cited the case of *Cincinnati Rubber Mfg. Co. v. Stowe-Woodward, Inc.*, 111 F. 2d 239 at page 241, where the pertinent reference is as follows:

“To support its contention that the claims are anticipated, appellant cites patents for clothes wringers, fruit presses, and for reducing wood to pulp. These patents are in a remote, non-analogous art and do not anticipate. *National Hollow B. B. Co. v. Interchangeable B. B. Co.*, 8 Cir., 106 F. 693, 702.”

Certainly the present plaintiff is even further afield in citing a flue gas measuring device and then altering it to make it appear pertinent.

The Cunningham mechanism is not an anticipation.

C. The Lower Court’s Holding That Appellant’s Use of a Coaxial Relationship Is “Nothing More Than a New Use Per Se” Runs Counter to the Well Known Doctrine That “Invention Cannot Be Defeated Merely by Showing That, in One Form or Another, Each Element Was Known or Used Before.”

Finding 16 reads as follows [R. 54]:

“Were Leishman the first to advantageously employ the mechanical principle of coaxiality in the function of radio tuning devices such employment would be nothing more than a new use *per se*.”

This finding is based upon the last complete paragraph of the opinion appearing on page 48 of the record, which reads as follows:

"Even if we were to assume, which we cannot under the record before us, that Leishman was the first to advantageously employ the mechanical principle of coaxiality in the functioning of radio tuning devices, we could not for that reason under settled standards of patent law validate the patent in suit. Such accomplishment would, we think, be nothing more than a new use, which is not *per se* patentable. *Cuno Corp. v. Automatic Devices Corp.*, 314 U. S. 84. See, also, *Old Town Ribbon & Carbon Co., Inc. v. Columbia Ribbon & Carbon Mfg. Co., Inc.*, 159 F. 2d 379, (C. C. A. 2, 1947)."

The court is of course mistaken in its apparent assumption that Leishman was not the first to employ the *coaxial relationship* to prevent the unwanted rotation of the tappet and rocker that takes place during the setting operation. Certainly neither Marschalk nor Schaefer used it. But the court said that if Leishman was the first, it would be only a new use *per se*, and would not be patentable.

The *Cuno Engineering* decision and the *Old Town Ribbon* decision, which the lower court cites in support of this portion of its opinion, are not at all applicable.

The *Cuno Engineering* decision contains the following paragraph:

"* * * A new application of an old device may not be patented if 'the result claimed as new is *the same in character as the original result*' (*Blake v. San Francisco*, 113 U. S. 679, 683, 5 S. Ct. 692, 694, 28 L. Ed. 1070) even though the new result had not before been contemplated. *Pennsylvania R. R.*

Co. v. Locomotive Engine Safety Truck Co., 110 U. S. 490, 494, 4 S. Ct. 220, 222, 28 L. Ed. 222, and cases cited. *Certainly the use of a thermostat to break a circuit in a ‘wireless’ cigar lighter is analogous to or the same in character as the use of such a device in electric heaters, toasters, or irons, whatever may be the difference in detail of design.*” (Emphasis added.) *Cuno Engineering Corporation v. Automatic Devices Corporation*, 314 U. S. 84, 91, 62 S. Ct. 37, 41.

Applied to the instant case, the doctrine of the *Cuno Engineering* decision is merely to the effect that if a coaxial relationship had been used in the past for a purpose that is “analogous to or the same in character” as appellant’s use—that is, for preventing unwanted rotation of two engaging members—there would be nothing patentable about appellant’s use of the coaxial relationship for that purpose in an automatic tuner. But a coaxial relationship has never been used for a purpose that is “analogous to or the same in character” as this in any art. The usual purpose for which a coaxial relationship is used, is exactly opposite to that for which it is used in Leishman’s combination. A coaxial relationship is usually used to facilitate rotation, *not to prevent it*. As Judge Harrison said in the *Associated* case, 36 Fed. Supp. 804, 808:

“* * * The importance of the mechanical relationship is well known in the art and a feature that must be considered in all machine designing *when you desire parts to move together harmoniously and free from friction*. The same principle is used in the crank shaft of any automobile. *It is a mechanical principle that is hundreds of years old*. Both the experts of the plaintiff and the defendant agree in this respect.” (Emphasis added.)

But the use of a coaxial relationship for the *opposite* purpose of *preventing* rotation was totally unprecedented in any art. Appellee's expert Schwarz testified as follows on this point [R. 429-430]:

“Q. (By Mr. Flam): Will you answer whether you have ever made parts coaxial in order to prevent movement of one of the parts? A. *I cannot think at this moment of an instance.*

Q. Can you think of any example of one in which movement of both parts is prevented after they have become coaxial?

* * * * *

The Witness: May I hear the question again?

(The question referred to was read by the reporter as follows: ‘Can you think of any example of one in which movement of both parts is prevented after they have become coaxial?’)

The Court: Movement of both parts?

Mr. Flam: Yes.

A. *I am sorry, I can't at this moment.*

Q. (By Mr. Flam): Then, so far as you know, this arrangement shown in the Leishman patent and as exemplified in these exhibits is unique, you haven't been able to find anything prior to 1937 like it, is that right? A. I haven't testified to the fact that I have seen this device presented to me as coaxiality. I don't believe that I could say that as of 1937 or 1938 or 1939 was the beginning of seeing this device as a unique one.

Q. Prior to 1937 you saw no device, then, in which the principle or relationship of the parts utilized coaxiality to prevent any movement of one or both of the parts that become coaxial? A. *I cannot think of an instance at this moment.*” (Emphasis added.)

With admissions like these from the opposing expert it should be clear that there has been no anticipation in *any* art of the appellant's use of coaxial relationship for preventing movement under circumstances even similar to those which arise in an automatic tuner.

The validity of this patent had been under litigation for eight years preceding the trial of this case. In the *Associated* case tried eight years before the present case, the firm of Lyon & Lyon also represented the company opposing the patent. Counsel was thus well aware that if appellant's patent was to be anticipated, it would be necessary to find some analogous use of a coaxial relationship. Schwarz' testimony after this eight year period is clear evidence that no such use has been found.

The *Old Town Ribbon* decision, which the lower court's opinion also quoted, is likewise not applicable. This was a Second Circuit case in which the court actually took care to make it clear that the Supreme Court doctrine there applied could not be extended to situations in which *even slight* physical changes must be made in order to use an old device for a new purpose.

On page 382, the following caution appears in the *Old Town Ribbon* decision:

“* * * This is the doctrine that a ‘new use’ can never be patentable. In this circuit we have many times applied it, and it has been recognized elsewhere. As we have said in earlier cases, this does not mean that very slight physical changes in a ‘machine’, a ‘manufacture’ for a ‘composition of matter’ may not be enough to sustain a patent; the act of selection out of which the new structure arises, is the determinant, and small departures may signify and embody revolutionary changes in discovery. . . .” (Emphasis added.)

The only prior art device in which appellee claimed to find a coaxial relationship was the Cunningham mechanism. (While the lower court erroneously held that this relationship was present in the Schaefer structure, neither of the appellee's experts made any such claim, and previous portions of this brief have shown that Schaefer's axes were widely separated.) In the alleged model of Cunningham's mechanism, as Dr. Mackeown admitted, many changes were made in an attempt to make it resemble defendant's device in structure and operation. The foregoing excerpt from the *Old Town Ribbon* decision clearly states that when "very slight changes" have to be made to adapt an old device to a new use, such changes may be enough to sustain a patent. In the instant case, the required changes were many; in fact, the whole theory of operation of Cunningham's gas measuring device had to be changed in order to simulate appellant's mechanism.

It should be clear from the foregoing discussions of the *Cuno Corporation* and *Old Town Ribbon* decisions that neither of them supports the lower court's view that a former use of a coaxial relationship for some other purpose would defeat the patentability of appellant's combination. The law that is applicable here is the one applied by this Honorable Court in *Pointer v. Six Wheel Corp.*, 177 F. 2d 153, where the court said at page 160:

"* * * invention cannot be defeated merely by showing that, in one form or another, each element was known or used before. (Citing many decisions.)

"The question is: Did anyone before think of combining them in this manner in order to achieve the particular unitary result,—a new function? *If not, there is invention.*" (The court's own emphasis.)

The mere fact that coaxiality has been used before for some other purpose, does not in any way affect the patentability of appellant's combination. Finding 16 is thus irrelevant.

D. The Conclusion of the Court of Appeals for the Tenth Circuit That Leishman's Combination Involved Only Mechanical Skill, Is Contrary to the Proven Facts; and Leading Scientific Authorities Say the Said Court's Alleged Analysis of the Reason for "Creeping" Is Fallacious and Its Figures Valueless.

It has been shown that the Marschalk, Schaefer and Cunningham devices relied upon by the district court are not anticipations at all. These were the only things in the present record that the opinion even mentioned. It is clear that the court below was influenced primarily by the decision of the Court of Appeals for the Tenth Circuit; in fact, the opinion herein, speaking of the said Tenth Circuit decision, stated: "we should and do consider such decision as highly persuasive and as weakening any presumption of validity to the claims in suit that would otherwise attach to the Leishman reissue patent by reason of its issuance. This, we think, is manifestly the correct position for us to take in the light of the unanimous confirmatory position of the Tenth Circuit Court of Appeals on rehearing. . . ."

Inasmuch as the present record proved conclusively that appellant's combination involved invention, it should be entirely immaterial what the Court of Appeals for the Tenth Circuit said about it.

Its conclusion that the defendant's solution would have been obvious to a mechanic skilled in the art, is entirely contrary to the practical fact that such solution was not apparent to such mechanics nor to the skilled engineers of large corporations who were confronted with the problem. Speculation is futile, and in this case totally unjustified, in the face of concrete evidence as to the facts.

As mentioned in the introduction to the Statement of the Case, the Court of Appeals for the Tenth Circuit in the case of *Leishman v. The Richards & Conover Co., supra*, rendered two different opinions. In the first of these opinions the said appellate court held against Leishman on the ground that there is no invention in his use of a coaxial relationship for *preventing* movement because, "The principle of coaxial relationship and its importance, where it is desired that two parts of a machine *cooperate together harmoniously*, has been within the knowledge, for many years, of ordinary mechanics skilled in the art." (Emphasis added.) Leishman asked for a rehearing, pointing out to the court that inasmuch as the object of the invention was to *prevent* the two parts from moving at all, the old use of coaxiality for the *opposite* purpose of *facilitating* rotation had no possible significance unless it might be for the purpose of showing that defendant's use of this relationship was unorthodox and a departure from the previous well-known uses.

When it was shown to the Court of Appeals for the Tenth Circuit that the purpose of the Leishman invention was to *prevent* absolutely all rotation during the setting process and that the old uses of coaxiality to *facilitate* rotation were therefore irrelevant, the court, upon rehearing, did an about-face and made a supposed mathematical

analysis of creeping which purported to show why Leishman's method of *preventing* movement would be obvious to a mechanic skilled in the art. The appellate court's analysis had no basis whatever in the record. No such analysis was made by any witness on either side, and nothing of the sort was presented or argued before either the district court or the appellate court. The grounds upon which the claims were held invalid were raised for the very first time by the appellate court itself in its final opinion after rehearing. Leishman thus lost the case upon grounds upon which he had never been heard.

Inasmuch as the present case had already been tried when the Court of Appeals for the Tenth Circuit rendered its decision, Leishman had no opportunity to introduce expert testimony in the present case to show that the Tenth Circuit analysis of creeping was in error. It was consequently most unjust for the lower court to set up the Tenth Circuit decision as a criterion to be followed here. The Court of Appeals for the Seventh Circuit says that a decision rendered under such circumstances "is entitled to but little weight."

In *Hazeltine Research Inc. v. General Electric Co.*, 86 U. S. P. Q. 233, F. 2d, the Court of Appeals for the Seventh Circuit explained that the court below had granted a summary judgment against the patent because it had previously been held invalid by the Court of Appeals for the Sixth Circuit. But the grounds upon which Hazeltine had lost in the Sixth Circuit had not been raised in the lower court in that case, nor had they been briefed or argued by either party. In rendering its decision on June 28, 1950, the Court of Appeals for the Seventh Circuit therefore said (86 U. S. P. Q. 235) :

"As to Hazeltine v. General Motors, 170 F. 2d 6, it should be observed that the defense of 'statutory bar' was not interposed in the District Court. It was not briefed or argued by either party and not even considered in the lower court. Consequently that decision is entitled to but little weight in the present proceedings." (Emphasis added.)

The judgment was accordingly reversed and the cause remanded to the District Court for a trial on the merits.

In order to rectify matters in the instant case, Leishman moved for a new trial so that expert testimony regarding the Tenth Circuit errors could be introduced in court. Defendant supported this motion by affidavits from leading scientific authorities to the effect that the purported analysis of creeping by the Court of Appeals for the Tenth Circuit was pseudo-scientific and based upon the inaccuracy of its own drawings and a misunderstanding of fundamental laws of mechanics.

Inasmuch as the matter discussed in the Tenth Circuit opinion is of a scientific nature, it would seem that the highest authorities available in Southern California to point out the serious errors in the said opinion would be those who are in charge of the branches of engineering to which the patent relates in the three leading universities in and near Los Angeles. These universities are, of course, California Institute of Technology, University of Southern California, and University of California at Los Angeles. If a single affidavit from such an authority had been presented the court might have had reason to suspect that possibly defendant had found only a single professor who could support his view. The defendant felt that if *three* affidavits were presented, each from a

leading authority in a different one of these universities, there should be no room left for any doubt whatever.

Defendant accordingly presented the analysis of creeping made by the Court of Appeals for the Tenth Circuit to the top men in their respective fields at these three universities. At California Institute of Technology and University of Southern California the defendant did not go to a professor of chemical engineering or electrical engineering, nor to an associate professor of mechanical engineering, but to the head of the Mechanical Engineering Departments in each case—that is, the Professor of Mechanical Engineering. At the University of California at Los Angeles there is no specific department of Mechanical Engineering, but there is a division which is even more highly specialized for the present purpose. This division of the Department of Engineering specializes in Engineering Research, and the defendant went to the engineer in charge of this branch of the department. Each of these three men is an outstanding authority, not only by virtue of his present position, but also because of other high qualifications set forth in the first part of each of the respective affidavits. These affidavits appear in Volume I of the present record, pages 71 to 83.

In order to show that the purported analysis of creeping made by the Court of Appeals for the Tenth Circuit is contrary even to the most *elementary* scientific and mechanical principles, defendant also obtained affidavits from an instructor in physics [R. 93] and an instructor in mechanical drawings [R. 83] at the Los Angeles Polytechnic High School.

All of the aforementioned authorities are in unanimous agreement that the said Appellate Court's analysis has no scientific basis whatever, and that Figs. 1 and 2, upon

which the said court based its analysis, are entirely worthless for any analytical purpose.

The Tenth Circuit's opinion based its analysis upon two figures which it drew, purporting to show the forces acting upon the Marschalk tuner. These figures appear on page 90 of the present record. The court referred to the dotted lines on the triangle J as levers. Additional levers were hypothecated between points B and D and between points D and C; and the court undertook to explain how the forces acting at the ends of these levers would act.

Professor Robert L. Daugherty, head of the Department of Mechanical Engineering at California Institute of Technology, says that the court's figures "would mislead anyone attempting to base calculations upon them" [R. 73, top of page]. He says, moreover, that the author of the analysis had "an entirely erroneous conception of levers or lever arms" [R. 73, bottom of page]. Mr. Daugherty gives the correct engineering conception of levers and forces on page 74 of the record, and he contrasts this with the erroneous conception revealed in the Tenth Circuit's opinion. He says, also [R. 74], "Beginners in the study of mechanics must frequently be cautioned against" the type of error made in this decision.

Mr. Hazen, in charge of Engineering Research at the University of California, says "both the figures and the discussion disclose a confused and inaccurate understanding of the principles of the science of Mechanics. Dimensions which are of no consequence in the action of the device are alluded to as lever arms for forces that are not described and which, in the actual device pictured, would not act at the points nor in the manner ascribed in the discussion" [R. 77].

Mr. Sydney F. Duncan, Professor of Mechanical Engineering at the University of Southern California, says that the errors in the drawings are "apparent to the naked eye" [R. 80], and attributes the court's analysis and conclusion to an "imperfect understanding of the laws of mechanics as taught in all schools and colleges of Engineering" [R. 79, last line, *et seq.*]. At the bottom of page 80 Professor Duncan says "The Court's analysis of the lever system purported to be shown by Figs. 1 and 2 of the decision is the result of first, an imperfect understanding of the basic laws governing levers and second, the singular shapes accidentally or intentionally chosen by the draughtsman who drew the figures."

The affidavits of Mr. Sorber [R. 83] and Mr. Madsen [R. 93] are also very illuminating with respect to the improper analysis made by the Court of Appeals for the Tenth Circuit.

It is believed that this Honorable Appellate Court will want to decide the issue of validity according to the formulas of the Supreme Court and those set forth by the present court in its *Six Wheel* decision, *supra*, which are hereinafter applied to the facts of the present case; and it is not believed that this Honorable Court will be impressed by a pseudo-scientific analysis which arrives at a conclusion exactly opposite from the demonstrated facts. The court is respectfully referred to the affidavits from which excerpts have here been quoted, and it is submitted that these authorities show that no weight whatever can properly be attached to what the Court of Appeals for the Tenth Circuit has to say regarding the method of analysis that a skilled mechanic would apply to the problem of "creeping." This Honorable Court has evidence before it as to what skilled engineers

actually did, and their acts speak far more loudly than speculation as to what some mechanic *might* have done.

A great deal more could be said about the gross errors in the opinion of the Court of Appeals for the Tenth Circuit, but it is believed that sufficient has been said already. However, should the present court desire to pursue this matter further, a more complete discussion of the Tenth Circuit analysis of creeping has been incorporated in the appendix hereto.

Even if the Court of Appeals for the Tenth Circuit had been able in retrospect to make a correct analysis of the causes of creeping, such belated analysis would not prove that Leishman's solution of the problem, made at a time when all others had failed, did not amount to invention.

In *Expanded Metal Co. v. Bradford*, 214 U. S. 366, at 381, the Supreme Court said:

"The fact that the invention seems simple after it is made does not determine the question; if this were the rule many of the most beneficial patents would be stricken down. It may be safely said that if those skilled in the mechanical arts are working in a given field and have failed after repeated efforts to discover a certain new and useful improvement, that he who first makes the discovery has done more than make the obvious improvement which would suggest itself to a mechanic skilled in the art, and is entitled to protection as an inventor." (Emphasis added.)

The Supreme Court adhered to that same doctrine in the recent case of *The Goodyear Tire and Rubber Company, Inc. et al. v. Ray-O-Vac Company*, 321 U. S. 275, where the court said at page 279:

"Viewed after the event, the means Anthony adopted seems simple and such as should have been

obvious to those who worked in the field, but *this is not enough to negative invention* (citing cases in a footnote). During a period of half a century, in which the use of flash light batteries increased enormously, and the manufacturers of flash light cells were conscious of the defects in them, *no one devised a method of curing such defects.*" (Emphasis added.)

This Honorable Court reiterated this same doctrine in its *Six Wheel* decision, *supra*, as follows (pp. 160-161):

"*At times, the result is accomplished by means which seem simple afterwards.* But, although the improvement be slight, there is invention, unless the means were plainly indicated by the prior art. (Citing authorities.)" (Emphasis added.)

In the instant case, the prior art had no simple solution to the problem solved by appellant's coaxial rocker and tappet construction. As this Honorable Court said of Knox in the *Six Wheel* case, appellant "deviated from the entire prior art. *He was an innovator, not a follower.*" (P. 161, the court's own emphasis.)

E. The Tests Prescribed by This Honorable Court in Its *Six Wheel* Decision Verify That Appellant's Solution of the Creeping Problem Involved Invention.

One of this Honorable Court's tests was set forth in the *Six Wheel* decision, *supra*, where the court, quoting Judge Learned Hand, said (p. 162):

"* * * so far as it is available, they [the courts] had best appraise the originality involved by the circumstances which preceded, attended and succeeded the appearance of the invention. Among these will figure . . .'"

Four things were then enumerated. These were: (1) “‘the length of time the art, though needing the invention, went without it:’” (2) “‘the number of those who sought to meet the need, and the period over which their efforts were spread:’” (3) “‘how many, if any, came upon it at about the same time, whether before or after:’” (4) “‘and—perhaps most important of all—the extent to which it superseded what had gone before.’”

Let us consider these in order.

“* * * THE LENGTH OF TIME THE ART, THOUGH NEEDING THE INVENTION, WENT WITHOUT IT * * *”

It has already been shown in the Statement of the Case (page 3 hereof) that the search for a satisfactory automatic tuner went back at least as far as 1924, and that various radio and electrical interests, including Zenith, Philco, Western Electric, Westinghouse Electric and Manufacturing Company, and John Hays Hammond, Jr. fought long patent office interferences over the first crude attempts to produce such a tuner. Appellant's simple device, now widely adopted, was not generally known until the patent issued in 1938. The art, though needing the invention, thus went without it for fourteen years.

“* * * THE NUMBER OF THOSE WHO SOUGHT TO MEET THE NEED, AND THE PERIOD OVER WHICH THEIR EFFORTS WERE SPREAD * * *”

In the *Pointer v. Six Wheel* case, this Honorable Court attached significance to the fact that “Neither

Stebbins nor Van Leuven succeeded in solving the problem." (177 F. 2d 153, at 161.) Earlier in the opinion it was disclosed that their activities began in January, 1925, and reference was later made to the fact that "The Knox application was filed January 3, 1927." (P. 155.) Two people thus sought to meet the need before Knox in the *Pointer* case, and the efforts of the three were spread over a period of two years. In the instant case, numerous people sought to meet the need before Leishman, and their efforts were spread over a period of fourteen years. Even on the specific problem of trying to meet the need by means of a device using adjustable tappets, the efforts were spread over a period of ten years. Schaefer's patent was filed in 1928 [R. 789], and experimenters unaware of Leishman's solution continued to work on the problem right up to the time of the issuance of Leishman's patent. His original patent No. 2,108,538, of which the patent in suit is a reissue, was granted Feb. 15, 1938, but as late as January, 1938, there was still activity along this line, Soffietti's patent having originally been filed in Luxembourg on January 25, 1938 [R. 840]. General Motors Corporation was also working on the problem at that time, as shown by Schwarz's testimony previously quoted. The record does not show how many worked on tappet tuners at Zenith Corporation, but we know there was at least Schaefer. Then there were the individual inventors Marschalk, Soffietti, Lane and Mackey. And at General Motors, as shown on pages 28 and 29 hereof, there were Funk, Stelzl, DeRoo, Shuttle-

worth and Schwarz. The number of those who sought to meet the need in the instant case is thus formidable.⁵

“* * * HOW MANY, IF ANY, CAME UPON IT AT
ABOUT THE SAME TIME, WHETHER BEFORE OR
AFTER * * *”

There is no evidence that anyone else came upon appellant's solution at about the same time, either before or after. Aside from appellant, there is no evidence that anyone, anywhere, ever built a coaxial rocker and tappet tuner until his teachings became publicly available some years later.

“* * * THE EXTENT TO WHICH IT SUPERSEDED
WHAT HAD GONE BEFORE.”

After appellant's coaxial rocker and tappet construction became known, the type of tuners that preceded it soon disappeared from the market almost completely. A few

⁵Others who sought to produce a satisfactory automatic tuner by other means before appellant's patent issued include Bast [R. 1143], Faas [R. 1145], Peck [R. 1149], Vasselli [R. 1156], Bird [R. 1164], Morin [R. 1172], Fitz Gerald [R. 1036], Enderwood [R. 1041], Teaf [702], Philips' Glowlamp Factory, Holland [R. 829], Marvin [R. 369, Patent No. 3 in the Book of Patents], Heath [R. 800], and Jacke [R. 809]. The Book of Patents filed with Defendant's Motion for Summary Judgment as Defendant's Physical Exhibit A contains the following additional automatic tuner patents that were applied for before the original of the patent in suit was granted: Flocco, No. 1,591,417; Hirsch, No. 1,942,599; Lefebre, No. 1,932,668; Nelson, No. 2,072,956; Carlson, No. 1,964,449; Heeren, No. 2,004,324; Bertschinger, No. 2,021,476; Flaherty, No. 1,948,373; Will *et al.*, Germany, No. 2,111,413; Schwarzhaupt, No. 2,069,627; Kellogg, assigned to Crosley Corporation, No. 2,253,433; Clements, No. 2,205,844; and Schnell, No. 2,138,328. Aside from the patents of Leishman, the record in the *Associated* case contained copies of only the Marschalk, Schaefer and Flaherty patents. Judge Harrison accordingly said (36 Fed. Supp. 804, at 807): “The record discloses a dearth of inventions in this field.” Actually, there was merely a paucity of evidence. Had that record been as complete as this, it could have been said that there had been a flood of inventions.

other types were tried for awhile, such as appellee's rack tuner [Pltf. Ex. 3], but in the mechanical tuner field the coaxial rocker and tappet construction has largely displaced all others. The abandonment of other types by Zenith and General Motors is characteristic of what has happened in the industry, and the inability of engineers to produce anything better after ten years is strong evidence of the importance of appellant's contribution.

A full account of the automatic tuners that preceded Leishman's construction upon the market, was given by him at the trial. It was undisputed. The most pertinent parts of this testimony have been reproduced in the appendix hereto, pages 19 to 23 of the appendix. Briefly summarized, the situation was as follows:

The Zenith Corporation, owner of the Heath patent that was applied for in 1924, was probably the first to place an automatic tuner upon the market. This was the Zenith-Schaefer tuner [Deft. Ex. H], which used ten movable parts between the adjustable tappet and the rotatable shaft, these parts being supported by eight guides. This tuner was on the market for about two years—between 1927 and 1929 (Appendix, pp. 19-20).

At about that same time a motor driven tuner appeared. In tuners of that type, the operator pressed a button corresponding to the desired station, and an electric motor did the actual work of rotating the tuning shaft to the required angular position. These tuners were also upon the market only about two years (Appendix, p. 19).

In 1936, the so-called telephone dial tuners came into commercial use (Appendix, p. 20). These were not sufficiently accurate by themselves, but were rendered usable because of the development of an electric circuit that

compensated electrically for their mechanical inaccuracies (Appendix, p. 21). This circuit was known as automatic frequency control (Appendix, p. 21). This circuit was quite complicated, and a special book was written to acquaint service men with its operations (Appendix, pp. 23-24).

With the development of the automatic frequency control circuit, motor-driven tuners again appeared on the market (Appendix, pp. 20-21).

Tuners using coaxial rockers and tappets became commercially available early in 1938. The first of these was manufactured by the Crosley Corporation [R. 218]. Other tuners of this type were also placed on the market in 1938 [R. 221-230].

The demise of the motor driven and telephone dial tuners may be briefly told in Leishman's own words [R. 256-257]:

“Q. (By Mr. Flam): * * * Did the development of the automatic frequency control circuits make it feasible to use your devices, including a coaxial rocker and tappet arrangement that you have testified about? A. No. * * * It wasn't required. Insofar as I know it has never been used with any radio set using a coaxial rocker and tappet tuner.

Q. You mentioned yesterday that motor-driven tuners had been used, I think you said, in the years 1936 and 1937. Were they in common use after the type of tuner exemplified by the Crosley device⁶ then on the market? * * *

* * * * * * * *

A. No. Those that were already in the hands of the public probably continued to be used. But as far

⁶The Crosley tuner [Deft. Ex. BB.] embodied the coaxial tappet and rocker construction.

as I know, no manufacturer manufactured a motor-driven tuner after that time. If they did, they were a rarity and they were an unusual thing in the lines of radio manufacturers. I don't know of any.

Q. What about the telephone dial type of tuner, did they continue in popularity after February or the latter part of the year 1938? A. * * * Some manufacturers may have continued to make some models that were already in production, but no new models were introduced using telephone dial type tuners."

After February, 1938, one manufacturer after another adopted coaxial tappet-and-rocker tuners, and the telephone dial type went into the discard. A list of some of the manufacturers that adopted appellant's combination appears on page 40 hereof.

The Zenith Corporation, which owned the Heath patent applied for in 1924, and which manufactured and sold the Schaefer tuner for two years, was among the early users of appellant's combination. It purchased tuners licensed under the patent here at issue from Crowe Name Plate and Manufacturing Company, Leishman's licensee [R. 225-226], and after experimenting with still other types it recently began making its own coaxial rocker and tappet tuners [Deft. Ex. GGG] because "This system is so simple and fool proof." [R. 1140.]

Like Zenith, General Motors also experimented with other types of tuners. These included the rack tuner [Pltf. Ex. 3]; the advancing nut type described by Mr. Schwarz in the portion of his testimony extending from the middle of page 368 to page 371; and another type referred to in the answer to Defendant's Interrogatory 35 [R. 36]. Only 10,000 of the latter kind were used [R.

36]; the advancing nut type was discontinued a year before the trial [R. 369]; and the rack tuner was abandoned in 1940 [R. 336].

As to the coaxial rocker and tappet tuners, however, Mr. Schwarz testified as follows [R. 414-415]:

“A. . . . They were used in the Buick, Pontiac and the Chevrolet—the Buick beginning late in 1941 and Chevrolet in 1941 and the Pontiac, I believe in 1941, and they were continued up to the present time and they are being continued during the 1948 model year. I would place the quantity in those three-car divisions of this tuner, whether we bought it or made it, whether condenser tuned or iron core tuned at, I would say the figure might be about one million tuners.” (Emphasis added.)

But in this recapitulation, Mr. Schwarz forgot all about Oldsmobile and Cadillac. Regarding them, he had earlier given this testimony:

“Q. Is General Motors at the present time equipping its current models with tuners like those shown by these last mentioned exhibits? A. Some of the current models have this particular type of tuner.

Q. Can you tell us what one? A. The Chevrolet and the Oldsmobile and the Cadillac.

Q. You recognize this tuner as of the type which has been referred to here as having an adjustable tappet and a rocker? A. Yes, I do.

Q. Will you state whether or not in tuners of that type as you have designed them and General Motors has produced them, the centers of those tappets are arranged so that they are symmetrical or concentric or identical with the centers of the rocker.

A. Yes, I believe they are concentric.

Q. You understand that that has been referred to here as coaxiality where those two centers register?

A. Yes." [R. 340.]

That completes the entire line of General Motors cars.

Leishman's tuners are also used in Chrysler, Plymouth, Dodge, DeSoto, Hudson, Ford, Mercury and Lincoln cars. (See pp. 41 and 42 hereof.)

In both household and automobile sets, appellant's tuner has thus been an outstanding success.

In the fourth test of invention—"the extent to which it has superseded what had gone before"—it again ranks very high.

The success of defendant's combination was not only immediate, but it has been continuous through a decade. It has stood the test of time as no other tuner has done. The best mechanical engineers in the radio industry failed in their experiments to hit upon appellant's construction, and in the ten years since it appeared they have been unable to think of anything any better.

F. Appellee Infringes Appellant's Patent by Appropriating Appellant's Structure, as Defined in the Claims at Issue.

1. Appellee Admits That Its Tuners Contain Coaxial Tappets and Rockers.

In case there is any doubt whatever as to appellee's use of a tappet and rocker that are coaxial in the fully engaged position, appellee's use of this structure may easily be verified without even looking at the accused devices. Appellee's expert Schwarz readily admitted that General Motors had appropriated this structure. In the portion of

this testimony appearing on pages 339 and 340 of the record, he admitted that this structure was present in Defendant's Exhibit JJ, which was Exhibit 2 of the complaint; and on pages 347 to 348, he made the same admission with regard to Defendant's Exhibit NN, which was Exhibit 1 to the complaint. For the convenience of the court, these portions of Mr. Schwarz' testimony have been reprinted in the appendix hereof on pages 17 to 19.

The question of infringement should thus merely be one of determining whether appellee's structure falls within the wording of the claims at issue. That such is the case has never been denied by appellee at any time. As to infringement under such circumstances, the Supreme Court on May 29, 1950, in the case of *Graver Tank & Mfg. Co., Inc., et al. v. Linde Air Products Co.*, 70 S. Ct. 854, said (p. 855) :

“In determining whether an accused device or composition infringes a valid patent, resort must be had in the first instance to the words of the claim. If accused matter falls clearly within the claim, infringement is made out and that is the end of it.”

In the present case, however, appellant is confronted by the decision of non-infringement which this Honorable Appellate Court rendered in the case of *Leishman v. Associated Wholesale Electric Co.*, 137 F. 2d 722. In that case, however, the court did not then have the benefit of most of the pertinent evidence now before it. In its *Associated* decision, this Honorable Court examined the original patent and stated (p. 727) :

“If they [the reissue claims in suit] do not include levers, the claims are not for the same invention as the original patent and hence are invalid. If they

do include levers, the claims are not infringed, for the accused device contains no lever."

This Honorable Court then additionally held that the plungers which moved the tappet in the accused device are not the equivalents of the levers in Leishman's structure.

In the case of *Leishman v. Radio Condenser et al.*, 167 F. 2d 890, this court affirmed its *Associated* decision. The *Radio Condenser* case was decided *on a motion for summary judgment* that there was no infringement, and Leishman consequently had no opportunity to introduce evidence as to how his contribution must be interpreted in the light of the prior art—an aspect of the subject of *invention* which this Honorable Court has subsequently recognized to be important in determining the issue of *infringement*.

2. When the Present Invention Is Considered in the Setting of the Prior Art, It Becomes Clear That It Is Immaterial Whether the Patented Combination Is Operated by a Plunger or a Lever.

In this Honorable Court's recent decision in the *Six Wheel* case, *supra*, the court quoted with approval the following words of Mr. Chief Justice Taft in *Eibel Process Company v. Minnesota and Ontario Paper Co.* (1926), 261 U. S. 45, 63:

"In administering the patent law the court first looks into the art to find what the real merit of the alleged discovery or invention is and whether it has advanced the art substantially. If it has done so, then the court is liberal in its construction of the patent to secure to the inventor the reward he deserves."

Although these words were written in 1926, this Honorable Court in the *Six Wheel* decision has recognized that

the same rule is to be followed today. That such is the case is now doubly certain, for the Supreme Court on May 29, 1950, in its *Graver* decision, *supra*, has referred approvingly to the decision of Judge Learned Hand in *Royal Typewriter Co. v. Remington Rand*, 168 F. 2d 691, 692—a decision in which Judge Hand recommended substantially the same procedure, as follows:

“Coming then to the question of infringement, we are first to interpret the claims in the light of disclosure; and *both the claims and the disclosure in the setting of the prior art.*”

If this Honorable Court were now, in the light of the present record, to interpret “both the claims and the disclosure in the setting of the prior art,” it would find that the means by which the tappet is moved into engagement with the rocker is entirely immaterial. This was not apparent to this Honorable Court in either the Associated or Radio Condenser cases, because in neither of these cases did this court consider the issue of invention. Yet in the *Eibel* case, which this Honorable Court has quoted approvingly, it was only because the Supreme Court had looked “into the art to find what the real merit of the alleged discovery or invention is” that it was able to determine whether the invention had been appropriated. At page 69 of its *Eibel* decision, the Supreme Court said:

“We come finally to the question of infringement. If the *Eibel* patent is to be construed as we have construed it, there can be no doubt that the defendant uses the *Eibel* invention.”

It was by a consideration of the issue of invention that the Supreme Court was able to learn how to construe *Eibel's* patent. A consideration of the issue of invention

in the present case, shows that appellant's contribution resides in the coaxial rocker and tappet arrangement that eliminated creeping in a simple and effective manner, and that the novelty of this contribution is not in any way tied in with the use of a lever.⁷ Infringement is thus not to be determined by the presence or absence of a lever, but rather by the presence or absence of a rocker and tappet whose axes are coaxial in the completely engaged position. Appellee admits that this structure is present in both of its accused tuners. If this Honorable Court is to follow the Eibel method of determining infringement which this court has approved in its *Six Wheel* decision, infringement is thus already made out.

3. The Last Decision of the Supreme Court Dealing With the Doctrine of Equivalents, Rendered May 29, 1950, Requires This Honorable Court to Hold That Infringement Cannot Be Avoided by Using a Plunger for Moving the Tappet.

In its new decision in the *Graver* case, *supra*, the Supreme Court has redefined equivalents in terms that can leave no room for any difference of opinion as to the equivalence of plungers for levers in appellant's patented combination. The Supreme Court said (pp. 856-857):

“What constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case. Equivalence, in the patent law, is not the prisoner of a formula

⁷Judge Harrison in the *Associated* case, 36 Fed. Supp. 804, recognized that a lever is not essential to appellant's combination. He said (p. 806):

“. . . it cannot be seriously denied that the accused device uses a rotatable rocker, adjustable tappet and when brought to rest the two parts are coaxial—the essential elements contained in the plaintiff's structure.” (Emphasis added.)

The plaintiff in the *Associated* case was, of course, Leishman.

and is not an absolute to be considered in a vacuum. It does not require complete identity for every purpose and in every respect. In determining equivalents, things equal to the same thing may not be equal to each other and, by the same token, things for most purposes different may sometimes be equivalents. *Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform. An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.*

“A finding of equivalence is a determination of fact. Proof can be made in any form: through testimony of experts or others versed in the technology; by documents, including texts and treatises; and, of course, by the disclosures of the prior art.” (Emphasis added.)

Let us consider these things in the order in which the Supreme Court sets them forth.

- (a) WHEN CONSIDERATION IS GIVEN, AS THE SUPREME COURT REQUIRES, “TO THE PURPOSE FOR WHICH AN INGREDIENT IS USED IN A PATENT, THE QUALITIES IT HAS WHEN COMBINED WITH THE OTHER INGREDIENTS, AND THE FUNCTION WHICH IT IS INTENDED TO PERFORM,” APPELLEE’S PLUNGER IS SEEN TO BE THE EQUIVALENT OF THE LEVER SHOWN IN THE PATENT.

In the tests recommended by the Supreme Court in its *Graver* decision, the court first says (p. 857): “Consideration must be given to the purpose for which an ingredient is used in a patent.” The purpose of the lever shown

in the patent is to move the tappet; the purpose of appellee's plunger is likewise to move the tappet.

The next thing mentioned by the Supreme Court is "the qualities it has when combined with the other ingredients." When combined with the tappet, the lever has the quality of moving it into engagement with the rocker. When combined with the tappet, appellee's plunger also has the quality of moving the tappet into engagement with the rocker.

The third thing to which the Supreme Court says consideration should be given, is "the function which it is intended to perform." In its decision in the *Associated* case, this Honorable Court said (137 F. 2d 722, 727): "The plungers perform a part, and only a part, of the function performed by appellant's levers F. and 66." Reference was then made to footnote 17 which reads: "Appellant's levers have a double function—that of operating the tappet 61 and that of operating the tappet 62. The latter function is not performed at all in the accused device." This court did not say that it attached any significance to the fact that the latter function was not performed in the accused device, and it could not properly have done so, because the second tappet (62) was not an element in any of the claims at issue. Both the original and reissue patents [R. 771 and 777, column 1, lines 28 to 30] state that one of the objects of the invention is "to make it possible for a single manual operation to tune *either* a radio set or a television set, or both." The claims at issue in the *Associated* case as well as here are directed to a tuner for a radio set only, and *not* both. The second tappet is required only in tuners that are to perform the double tuning operation, and the second tappet is

therefore not an element in any of the claims that are drawn to a radio tuner.⁸ *In a radio tuner, appellant's levers thus have a single function*—that of operating the tappet 61. This function is performed by appellee's plunger.

(b) THE SUPREME COURT SAYS WHEN PERSONS REASONABLY SKILLED IN AN ART KNOW OF THE INTERCHANGEABILITY OF ONE THING FOR ANOTHER, THEY ARE MECHANICAL EQUIVALENTS. PLUNGERS AND LEVERS ALSO RESPOND TO THIS TEST.

The Supreme Court further says (p. 857): "An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was." Persons reasonably skilled in any art would encounter in any store or lunch counter cash registers operated interchangeably by *levers or plungers*. They would have daily contact with desk telephones that are switched out of circuit by placing the hand-set on the *plunger* in the cradle, and with pay telephones that are switched out of circuit when the receiver is hung on a *lever*. In their own homes they

⁸In Plaintiff's "Memorandum Opposing Defendant's Motion for Summary Judgment" [R. 24] Mr. Leonard S. Lyon and Mr. Leonard S. Lyon, Jr., first explain the operation of the parts in the patent that are used for a radio tuner, and then say [R. 25]:

"In the drawing there appears a second cam or tappet 62 which is mounted upon the lever F and is shaped to contact another rocker 54 mounted upon a shaft distinct from the shaft of the rocker 48, which second shaft is intended to be the tuning shaft of a television receiving apparatus and which is not present in plaintiff's accused tuners.

The device of the patent in suit, therefore, consists essentially of *three elements*; a *lever* adjustably mounting a *tappet* which is movable by the lever into contact with a *rocker* attached to the shaft to be positioned by a movement of the lever." (Emphasis added.)

would turn lights on or off by pushing buttons (plungers) or by flipping little *levers*. The controls of their automobiles would be operated interchangeably by *levers* or *plungers*; in fact, they would encounter these common equivalents in the controls of nearly all devices. In addition, persons reasonably skilled in the art would be familiar with the prior art, which teaches the interchangeability of plungers and levers for operating automatic tuners. Such patents will be discussed later in connection with what the Supreme Court says regarding the use of *the prior art* for determining infringement.

(c) THE NEW EVIDENCE IS OF A TYPE APPROVED BY THE SUPREME COURT FOR DETERMINING INFRINGEMENT, AND IT VERIFIES THAT THE ORIGINAL AND REISSUE PATENTS ACTUALLY DISCLOSED A PLUNGER FOR MOVING THE TAPPET.

The Supreme Court says that proof of equivalence (p. 857) "can be made in any form: through the testimony of experts or others versed in the technology; by documents, including texts and treatises . . ." Let us consider "the texts and treatises" before discussing "the testimony of experts and others versed in the technology"—because that is the order in which defendant introduced the new evidence that was not before this Honorable Court in the *Associated* and *Radio Condenser* cases. Texts and treatises were offered to verify that the original and reissue patents both actually disclosed the use of a plunger for moving the tappet in appellant's combination. The part 57, Fig. 2, on which the tappet 61 is mounted in the original and reissue patents, is as much a plunger as those

on which the tappets are mounted in the General Motors and Crosley tuners.⁹

Webster's New International Dictionary defines the term *plunger* as follows:

"*b Mach.* (1) A sliding *reciprocating piece* driven by or against fluid pressure; a piston; esp., a long valveless piston, used as a force in a force pump (which see), as a ram in a hydraulic press, or the like. (2) *A piece with a motion more or less like that of the foregoing*, as a device for firing the charge in a cartridge or a contact mine, *the dasher of a churn, the iron core of an electric sucking coil.*" (Emphasis supplied.)

The coaxial relationship introduced by defendant makes it absolutely necessary to use a plunger both in Plaintiff's Exhibit JJ tuner and in the illustrative embodiment shown in defendant's patent. When the recess is in the rocker, as in these embodiments, the tappet must be moved so that its axis extends within the space between the rocker arms in order that the axis of the tappet and the axis of the rocker may be brought into line. This requires that the tappet be mounted upon something that can move in and out of this space with a reciprocating motion like "the dasher of a churn" or "the iron core of an electric sucking coil," which Webster says are plungers. The device of the patent provides a plunger 57 for this purpose, and it moves down inside the rocker and moves out again with a reciprocating motion like the dasher of a churn or the iron core of an electric sucking coil.

At the trial, Mr. Leishman gave the following *undisputed* testimony on this point [R. 262]:

⁹The tuners involved in the *Associated* case, *supra*, were made by the Crosley Radio Corporation, which assumed the defense.

“Q. By Mr. Flam: Can you state in your own words what is meant by a plunger, without referring to a dictionary? A. A plunger is any device that moves in and out of something else with a reciprocating motion, as does the little cores that move in and out of the coils in the permeability tuners that we have discussed here, or the iron cores in sucking coils or solenoids.

Q. Do plungers have to move in a straight line?
A. No. So long as they have a reciprocating motion and move into something they are still plungers.”

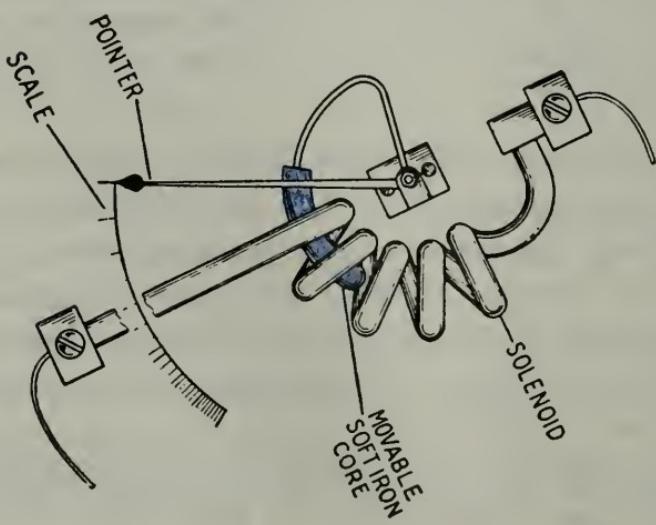
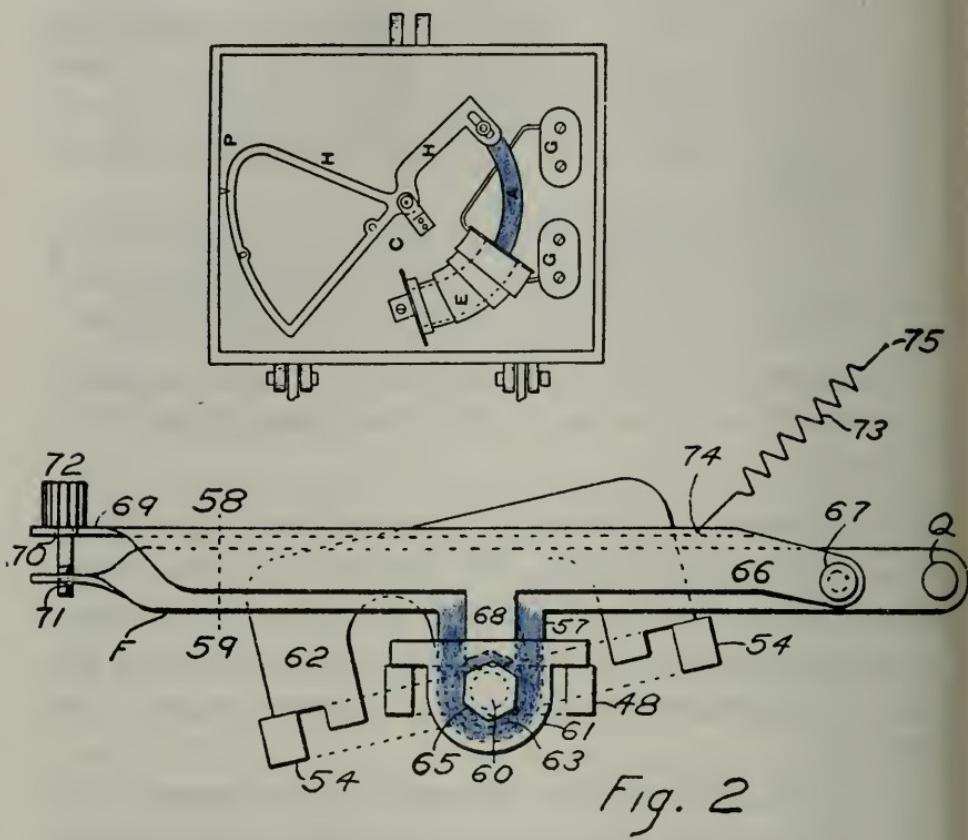
No attempt was made to refute this testimony by either of plaintiff's witnesses nor in the cross-examination of Mr. Leishman.

In *Elements of Alternating Currents* [Deft. Ex. PP, R. 1072], a text published in 1901 by the Macmillan Company of New York and London, the following pertinent explanation appears on page 41 [R. 1072], regarding the soft iron plungers in plunger type ammeters and voltmeters:

“36. Plunger type ammeters and voltmeters.—In instruments of this type the current to be measured passes through a coil of wire which magnetizes and attracts a movable piece of soft iron to which the pointer is fixed.”

In order that the court may readily compare such plungers with the plunger 57 in Fig. 2 of appellant's patent, two different illustrations of such meter devices with their iron core plungers (colored blue) are arranged on page 98 hereof, one above and the other below a reproduction of defendant's Fig. 2. The illustrations of the electric devices have been oriented so that the various parts are in substantially the same relative positions in all three figures. The upper figure is Fig. 44 from page 1019 of

"A Dictionary of Applied Physics" [Deft. Ex. QQ, R. 1074], which was published in 1922, also by Macmillan



and Co., Limited, London. The iron core plunger A moves into the sucking coil E in the same manner that defendant's plunger 57 moves into the rocker, as shown in the central figure. Regarding this device, page 1018 of Defendant's Exhibit QQ [R. 1073] says:

"This instrument uses the essential principle of a moving iron ammeter in which *a soft iron core is drawn into a solenoid*, the motion being controlled by gravity. * * * The principle of the instrument is shown in Fig. 44, in which E is the *solenoid*, A the *iron core* which is pivoted at C₁ and carries an iron frame H, to which the glass tube D is attached. As the tube is tilted by the action of the solenoid the balls run from the curved portion of the tube into the lower limb, and the number which have fallen over indicate the maximum intensity of the current." (Emphasis added.)

The figure below Fig. 2 from the patent, is an illustration from *Electrical Measurements* [Deft. Ex. RR, p. 1076 of the present Record], a text of the Vocational Education Program for National Defense. This illustration is Fig. 30 from the said text, and the caption under the figure in the text reads:

"Early Magnetic Vane Mechanism of the Solenoid Type Courtsey of Weston Electrical Instrument Corp."

The description of this figure in the text is as follows:

"Fig. 30 illustrates one model of a former solenoid meter. The solenoid was stationary and fastened to the instrument base. The moving element consisted of a soft iron core and a pointer. The moving element

was so balanced on its pivot that *the soft iron core extended slightly into the solenoid*, and the pointer was inclined at an angle to allow for a circumferential travel over a graduated scale corresponding to the distance *the core was pulled into the solenoid.*" (Emphasis added.)

In the figure just described, it will be noticed in the reproduction on page 98 hereof that the movable soft iron core plunger moves into the solenoid or sucking coil just as the plunger 57 moves into the rocker in Fig. 2 from appellant's patent.

The part 57 that moves appellant's tappet thus fully responds to Webster's definition of a plunger. Leishman's testimony that part 57 is a plunger was unchallenged.

Plaintiff's tuners thus cannot be distinguished from appellant's illustrative embodiment on the ground that plaintiff's tappet is moved by a plunger, for appellant's tappet is also moved by a plunger. *None* of the evidence demonstrating this fact was in the record of the *Associated* case or the more recent case of *Radio Condenser Co., et al. v. Leishman, supra*.

The only possible distinction that remains is that plaintiff's plunger moves in a straight line while the plunger shown in defendant's illustrative embodiment moves in an arc.

Appellee knows that the issue of infringement ultimately gets down to this immaterial distinction. No litigant could possibly introduce any evidence or testimony that would give this distinction any significance. Rather than attempt to belabor such a point, those attacking the patent in *The Richards and Conover* case admitted that it made no difference whether the tappet was moved by a

lever or a plunger.¹⁰ In the instant case, neither of appellee's witnesses gave any testimony whatever on this matter; in fact, appellee was unable to introduce any evidence of any kind in support of its contention that infringement has been avoided by moving the tappet by means of a plunger instead of a lever. Appellee's counsel hoped to prevail by preventing appellant from introducing any evidence that would run counter to this Honorable Court's opinions in the *Associated* and *Radio Condenser* cases, in which there was no testimony on this point. As soon as an attempt was made to introduce testimony that would require a revision of this Honorable Court's previous opinions, appellee's counsel tried to make it appear that such testimony was entirely out of order. Objection was made to the very first question, as shown on page 164 of the record where the following appears:

“Q. (By Mr. Flam): Now, in connection with that model, Mr. Leishman, does it make any differ-

¹⁰The expert for The Richards and Conover Company was Dr. Spotts, Associate Professor of Machine Design at Northwestern University and a consulting engineer for Galvin Manufacturing Company, manufacturers of the radio receivers containing the tuners that were there accused. A copy of the printed record in that case was filed with Plaintiff's Supplemental Reply Brief, and it has been made a part of the record on appeal. On page 182 of that record, the following testimony of Dr. Spotts appears:

“A. If one wished to use a plunger that would give straight line motion as support for the tappet rather than the pivoted lever which gives motion in the arc of a circle of a rather large radius, draftsmen would have no compunctions about substituting a plunger giving a straight line for the lever, giving an arc of a circle, since the motion is rather small while the tappet is being brought into contact with the rocker. A draftsman would make that substitution in the usual line of his work.

“Q. (By the Court): Easy to do. A. Oh, yes.

“Q. It would impose no serious problem where a lever is used and you decided you wanted to use a plunger, to change the design to make it work with a plunger? A. A draftsman does those things every day in the week in his usual line of work.”

ence in your device whether the tappet is moved in an arc to contact the rocker or whether it is moved in a straight line to contact the rocker?

Mr. Lyon: I object to that, your Honor. The witness is asked if it makes any difference in his device. We have a decision here, two decisions of the Circuit Court of Appeals on the point and it is asking him for a conclusion without the facts being stated on which the conclusion is to be based and I think it is a conclusion of law when he asks him if it makes any difference in his device. I don't know exactly. It is not a very illuminating question, but if it is intended to be a statement derogatory of the court of appeal's decisions, why, I object to it as out of order.

Mr. Flam: I am not offering it in derogation of any opinion. I am trying to show here that there are other factors not considered by the Circuit Court of Appeals which make it necessary for them to revise that opinion.

The Court: Objection overruled."

Mr. Lyon, of course, recognized that the question *was* very illuminating. He recognized at once that it referred to the only possible distinction between moving the tappet by means of a rectilinearly movable plunger or moving the tappet by means of a lever; in fact, as soon as the question was asked he specifically stated that we have "two decisions of the Circuit Court of Appeals on the point"—decisions which, however, had been arrived at without the court's having the benefit of expert testimony as to the equivalence of moving the tappet in a straight path by means of a plunger or in a curved path by means of a lever. Counsel knew that if appellee is to prevail upon the issue of infringement it must rely solely upon these previous decisions.

After the court overruled Mr. Lyon's objection, the testimony continued [R. 165]:

"Q. (By Mr. Flam): Will you answer the question? A. No, it makes no difference at all by what route or course the tappet comes into engagement with the rocker. I think that the models in the L series containing the rocker L-1 and the tappet L-2 demonstrate that you can bring it down in an arc or you can bring it down straight or you can bring it down from the other side and it is all the same story. It doesn't make any difference. It doesn't make a bit of difference to my device in the operation of the device, what path the tappet takes to and from that coaxial position. The point is, you have got to have it there when the adjustment is made, and then you have got to move it out of the way so that the rocker can turn, and when the device is to be tuned again the rocker [obviously this should read *the tappet*] has to be pushed down into engagement, and the route, I think is immaterial. We have a chart here which further illustrates that point."

Appellant then demonstrated that it makes no difference whatever by what route the tappet is brought into engagement with the rocker. This was done by means of Defendant's Exhibit N, which was explained in the testimony extending from page 165 to page 169 of the record. For the convenience of the court this testimony has been introduced on pages 24 to 29 of the appendix hereto. This exhibit clearly shows that it makes no difference whatever whether the tappet is brought into engagement with rocker along a curvilinear path or a rectilinear path, or whether it moves in a path which curves to the right or to the left, or straight up and down. Appellee's counsel objected to the introduction of Exhibit N for the same reason that he

objected to defendant's testimony [R. 166 and 169], this objection being that it was out of order [R. 164] because it conflicted with this Honorable Court's previous decisions.

This Honorable Court may further demonstrate the immateriality of the path of the tappet by placing the rocker L-1 upon the base L and then moving the *coaxial* L-3 tappet to and from the rocker in a variety of paths, curved or straight. So long as the tappet reaches its ultimate coaxial position with the rocker, the path is seen to be utterly immaterial.

There was no such chart as Defendant's Exhibit N in the *Associated* case nor in the summary judgment proceeding in *Radio Condenser et al. v. Leishman*.

There was no such demonstrating material as the parts L, L-1 and L-3 in the record of either of these previous cases.

In defendant's physical Exhibit N, plungers were printed on flaps that folded over enlargements of the patent drawings, demonstrating that the action is the same regardless of whether the path of the tappet is arcuate or straight. This exhibit also shows that a straight path is merely a mean path between the two opposite arcuate paths that are formed if the tuner is facing to the right or to the left. *Nothing like this was in the record of either of the previous Ninth Circuit cases.*

In order to have an abundance of evidence on this point, Mr. Flam handed Mr. Leishman a chart [R. 270], later marked Defendant's Exhibit SS, on which two figures were drawn, each showing a tappet in coaxial engagement with a rocker. The witness added a lever to one of the figures, showing the tappet mounted upon a lever. Mr.

Flam's next question and the witness' answer were as follows:

"Q. Now will you show what a draftsman would need to do to mount the tappet upon a plunger in connection with the lower part of this chart? A. All you need to do is extend the plunger portion and provide guides for the plunger." [R. 270-271.]

No chart similar to chart SS was present in the *Associated* case, and no such demonstration was given; and in the more recent *Radio Condenser* case there was, of course, no trial.

The immateriality of the nature of the operating means, and the equivalency of levers and plungers for moving the tappet, were thus established independently by four different items of *new* evidence. First, by the demonstration that the projection 57 is as much a plunger as plaintiff's operating means; second, by the L series models; third, by defendant's chart N; and fourth, by Defendant's Exhibit SS, on which the substitution of a plunger for a lever was demonstrated to the Court. *This was all new evidence. None of it has ever been seen by this Honorable Court of Appeals.* Any one of these four items of evidence is alone sufficient to show that infringement of the claims here at issue cannot be avoided by the substitution of a plunger for a lever, and that these elements are full equivalents for moving the tappet.

Plaintiff offered no evidence whatever to support its contention that levers and plungers are not equivalents for operating defendant's combination. It produced no exhibits relevant to this contention. Neither of its expert witnesses discussed any of appellant's exhibits that were presented to show that the nature of the operating means

was immaterial to the invention or its operation. Neither witness was questioned in any way regarding Defendant's Exhibits N, or SS, or the exhibits in the L series. Neither of them was questioned in any effort to refute defendant's testimony that the projection 57 shown in the reissue patent is actually a plunger, nor did either of them refer in any way to Appellant's Exhibits PP, QQ, or RR, which establish this fact. Moreover, Leishman was not even cross-examined regarding his testimony that the nature of the operating means is immaterial and that either levers or plungers may be used to move the tappet. The evidence introduced by appellant is *the only evidence in the record on this issue, and it was not disputed.*

Regarding the determination of equivalence by means of texts and testimony, the *Graver* decision (p. 857) said:

“* * * Like any other issue of fact, final determination requires a balancing of credibility, persuasiveness and weight of evidence.”

The evidence presented by appellee must be accepted as credible, because it was not disputed and no opposing evidence of any kind was presented. All the weight was thus on one side and there was none whatever on the other.

(d) THE SUPREME COURT SAYS THAT EQUIVALENCE MAY BE DETERMINED “OF COURSE, BY THE DISCLOSURES OF THE PRIOR ART”; AND IN THIS CASE, THESE DISCLOSURES ALONE ARE DETERMINATIVE.

When no prior art is available, the courts must determine whether one thing is the equivalent of another by ascertaining whether they perform the same function *in the same or substantially the same way*. The real meaning of this frequently used phrase is lucidly explained in

Section 468 of *Walker on Patents*, Deller's Edition, Vol. 3, pages 1706 and 1707:

"In a purely scientific sense, a screw always performs its function in a substantially different way from a lever, and in substantially the same way as a wedge. Screws and wedges are equally inclined planes, while a lever is an entirely different elementary power. But screws and levers can practically be substituted for each other in a larger number of machines than screws and wedges can be similarly substituted. When a lever and a screw can be interchanged and still perform the same function with a result that is beneficially the same, they are said to perform the same function in substantially the same way."

Although "a screw always performs its function in a substantially different way from a lever," screws and levers are nevertheless "*said* to perform the same function in substantially the same way" when they "can be interchanged and still perform the same function *with a result that is beneficially the same.*" (Emphasis added.)

In the absence of any prior art, a court considering the equivalence of *plungers* and levers, rather than *screws* and levers, in appellant's combination would thus be required to ascertain if a plunger can be interchanged for the lever "and still perform the same function with a result that is *beneficially the same*"; and if the answer is in the affirmative, the plungers and levers would be "said to perform the same function in substantially the same way." Plaintiff's plungers and the levers in the patent both perform *identically* the same function of moving the tappet, and with a result that is *beneficially the same*. It should thus be obvious that a court applying this test

would be called upon to say that plaintiff's plungers and the levers of the patent "perform the same function in substantially the same way" and are mechanical equivalents.¹¹

¹¹The paragraph from Walker on Patents that is here applied to the determination of whether appellee's plungers are equivalents of the levers shown in the patent, was cited in the decision of the Court of Appeals for the Tenth Circuit in its first opinion in *The Richards and Conover* case, *supra*, in its reference to the decision of this Honorable Court in the *Associated* case, which the Court of Appeals for the Tenth Circuit discussed as follows (172 F. 2d 365, 368, 369) :

"There, as here, the alleged infringing device employs only one rocker and one set of corresponding tappets, and the tappets are mounted on and moved by plungers, not levers.

"However, claims 7 to 11, inclusive, embrace a single rocker and corresponding adjustable tappets mounted on pivots, means for moving each tappet so one of its sides engages one arm of the rocker and rotates the rocker until the other side of the tappet engages the other arm of the rocker, and *they do not specifically embrace a lever means for carrying and moving the tappets; and we are unwilling to rest our decision on the narrow ground that the lever in the device of the patent in suit and the plunger in the accused device are not mechanical equivalents.*"³ (Emphasis added.)

Footnote No. 3 of the Tenth Circuit decision then referred to the previous Tenth Circuit decision in *Steiner Sales Co. v. Schwartz Sales Co.*, 98 F. 2d 999, at page 1012, and to Section 468 in Walker on Patents which has just been discussed.

Page 1012 of its *Steiner* decision to which the Court of Appeals for the Tenth Circuit referred in its footnote 3, contains the following:

"We are of the opinion that a device having ribs which project from the base of the inner section, extend along the sides thereof and travel in *grooves or channels* in the side walls of the outer section, and *by means of which the inner section may be moved back and forth horizontally*, responds to the claims in suit equally with one where the inner section may be tipped back and forth on a *hinged joint*." (Emphasis added.)

In the present case, a plunger that travels in grooves or channels, and by means of which the tappet *may be moved back and forth horizontally*, responds to the claims in suit equally with one where the operating member is a lever that moves on a *hinged joint*.

The lower court in *The Richards and Conover* case held the claims here at issue were clearly valid and clearly infringed.

But if there is prior art available, the court does not have to bother with all this. There is then a simpler formula. The *Graver* decision at page 856 cites two old Supreme Court opinions that deal with the significance of the prior art in this respect. One of these was *Imhaeuser v. Buerk*, 101 U. S. 647, 25 L. Ed. 945, where the court said (p. 656) :

“Patentees of an invention consisting merely of a combination of old ingredients are entitled to equivalents, by which is meant that *the patent in respect to each of the respective ingredients comprising the invention covers every other ingredient which, in the same arrangement of the parts, will perform the same function, if it was well known as a proper substitute for the one described in the specification at the date of the patent.* Hence it follows that a party who merely substitutes another old ingredient for one of the ingredients of the patented combination is an infringer if the substitute performs the same function as the ingredient for which it is so substituted, and it appears that it was well known at the date of the patent that it was adaptable to that use.” (Emphasis added.)

Another old Supreme Court case cited with approval in the *Graver* decision is *Seymour v. Osborne*, 11 Wall. (78 U. S.) 516, at 556, 20 L. Ed. 33 at 42. This case, like the instant one, dealt with a *reissue* patent.¹² The Supreme Court, in citing *Seymour v. Osborne*, shows that the application of the doctrine of equivalents is the same with respect to a reissue patent as it is with respect to an

¹²In *John Kitchen, Jr. Co. v. Levison*, 188 F. R. 658, 661, this Honorable Court of Appeals for the Ninth Circuit quoted this *Seymour v. Osborne* case as authority for the finality of the decision of the Commissioner of Patents as to the propriety of the reissue.

original patent, for the page cited in the *Graver* decision sets forth precisely the same doctrine expressed in *Imhaeuser v. Buerk, supra*. The *Seymour v. Osborne* explanation is as follows:

“* * * Mere formal alterations in a combination in letters patent, however, are no defence to the charge of infringement, and the withdrawal of one ingredient from the same and the substitution of another which was well known at the date of the patent as a proper substitute for the one withdrawn, *is a mere formal alteration of the combination if the ingredient substituted performs substantially the same function as the one withdrawn.*” (Emphasis supplied.)

In the instant case, the function of the lever and the function of the plunger are not merely *substantially* the same; they are *identical*. The function in both cases is to move the tappet. The question then becomes, does the prior art show that a plunger was “well known at the date of the patent as a proper substitute” for a lever.

Now that the Supreme Court has stated anew that equivalence may be determined “of course, by the prior art” and has cited these two old cases which deal with this subject, the doctrine which they expound is affirmed as the law of the land. And since one of these newly approved cases deals with a reissue, it is clear that the terms of reissue claims are not to be restricted to what was shown in the original, but are to receive the benefit of the doctrine of equivalents the same as any other patent. If the prior art shows that plungers and levers have both been used for operating automatic tuners, or for moving tappets, this Honorable Court has no alternative consistent with these newly affirmed decisions but to hold that plain-

tiff cannot avoid infringement by withdrawing the lever and substituting a plunger.

Let us first look at some of the patents which appellee itself urged as pertinent prior art in the complaint. The first one on appellee's list [R. 7] is the Kettell patent [R. 817] issued in 1883. Figure 2 and a portion of Fig. 1 from this patent are reproduced on the folding insert at the back of the appendix hereof. In view of the discussion of this patent on pages 14 and 15 of this memorandum, no further explanation of Kettell's clock-setting mechanism will here be necessary. Suffice it to say that Kettell shows a *lever* E (colored blue) for moving the attached tappets (colored red) in Fig. 1, and he shows a *plunger* a (colored blue) for moving the attached tappets (colored red) in Fig. 2. Kettell explains that the *plunger* and *lever* serve the same purpose. He says [R. 820, lines 81 to 83]:

“*a* represents a slide [plunger] working in ways *b*, and having lateral arms [tappets] similar to lever F, Fig. 1 [obviously this should be the lever *E*, because F is the cam], *it serving the same purpose.*” (Emphasis added.)

Levers and plungers were thus known as equivalents for moving tappets as far back as 1883, and the patent even says they serve the same purpose.

Appellee also urged in the complaint [R. 7] that the Woodbridge patent [R. 713] is pertinent prior art, and Judge Harrison agreed as to its pertinence, as shown on page 17 hereof. Figures 1 and 10 of this patent have been reproduced for the convenience of the court on the folding insert at the back of the appendix to this brief. Fig. 1 shows a lever C¹ for moving the tappet (colored red)

in Fig. 1; and in Fig. 10 Woodbridge shows a plunger C⁴ for moving the tappet C³.

Plungers and levers were thus shown as equivalents for moving tappets in the Woodbridge 1897 patent.

The Danish patent 52.047 [R. 829] even illustrates the use of both levers and plungers for moving the tappets in an automatic tuner, the tappet 3a in Fig. 1 [R. 837] being mounted on the plunger 3, whereas in Fig. 2 the tappet is shown mounted on a projection 14 attached to the lever 4.

The Peck patent [R. 1149] discloses an automatic tuner that is optionally operated by *levers* 50 [R. 1150] or by electrically operated *plungers* 30 [R. 1149]. After illustrating these alternatives, the specification says [R. 1152, lines 69 to 71]: “*Various* expedients may be adapted to cause the downward movement of the pivot 20.” (Emphasis added.)

This pivot is attached to the lever 50 on page 1150 and to the plunger 30 on page 1149.

In view of this disclosure in Peck’s prior art 1932 patent, any court interpreting appellant’s disclosure in the light of the prior art must hold that “various expedients may be adapted to cause the downward movement of the pivot” 60 on which appellant’s tappet is mounted, as shown in Figs. 2 and 3 of the original and reissue patents here at issue.

Three of the prior art patents just discussed illustrate and describe the alternative use of plungers and levers for moving tappets, and one of these, the Danish patent, dis-

closes these equivalents for moving tappets in an automatic tuner. The Peck patent [R. 1149] also illustrates and describes an automatic tuner operated interchangeably by levers (Figs. 3 and 5) or by electrically operated plungers 30 (Fig. 3). In addition to these, the Bast patent [R. 1143] and the Faas patent [R. 1145] both show plunger-operated tuners, as does the Marvin patent No. 1,704,754 [No. 3 in the Book of Patents introduced as Deft. Ex. A with Defendant's Motion for Summary Judgment] which was discussed by Schwarz at the trial [R. 369].

It has thus been conclusively shown that plungers were well-known as substitutes for levers in automatic tuners when appellant's patent was granted, and that they had even been used for the specific purpose of moving tappets.

In its *Imhaeuser v. Buerk* decision, *supra*, which the Supreme Court cited with approval in its opinion in the *Graver* case, the court said (p. 656):

“* * * a party who merely substitutes another old ingredient for one of the ingredients of the patented combination is an infringer if the substitute performs the same function as the ingredient for which it is so substituted, and it appears that it was well known at the date of the patent that it was adaptable to that use.”

This Honorable Court thus has no alternative consistent with the Supreme Court's decision in the *Graver* case, excepting to hold that General Motors has infringed the claims here at issue.

4. This Honorable Court Has Previously Recognized That Infringement Cannot Be Avoided by Substituting a Rectilinearly Movable Member for a Pivoted Member That Performs the Same Function.

This Honorable Court in the *Six Wheel* case, *supra*, applied substantially the same rules for determining infringement that the Supreme Court has reaffirmed in the *Graver* case. The *Six Wheel* opinion referred to the same doctrines and even cited some of the same cases, thus (177 F. 2d 153 at 163):

“These elements combine to produce *the same results*,—flexibility, equal distribution of the load, avoidance of excessive wear,—which the patent in suit first taught the art. Whether, as the court found, both *were known as proper substitutes for the mentioned elements*,—*Gould v. Rees*, 1872, 15 Wall. 187, 193 [cited in the *Graver* case],—or not, the court found correctly identity of structure *on the ground of equivalency* [citing cases, including *Imhaeuser v. Buerk*].

“It also found correctly identity of function. Sanitary Refrigerator Co. v. Winters [also cited in the *Graver* case].

“Both spell infringement.” (Emphasis added.)

Proceeding according to these rules, this Honorable Court referred (p. 163) to Pointer’s “coil springs . . . which provide the only spring suspension means for the four wheels from the frame of the vehicle,” and held that “They are the equivalent, structurally and functionally, of the laminated leaf springs in the patent in suit.”

Coil springs, which move in a straight line, and the pivoted laminated leaf springs of the patent there in suit,¹³ differ in precisely the same way as do appellee's plungers and the levers shown in appellant's patent. This is graphically shown on the folding insert following page 138 hereof.

Now that Pointer's rectilinearly movable coil springs have been held to be equivalents of Knox's pivoted leaf springs, there can be no question as to the equivalence of appellee's rectilinearly movable plungers and the pivoted levers shown in the patent here at issue.

5. When the Present Invention Is Considered in the Setting of the Prior Art and in the Light of Pertinent Decisions, It Is Clear That the Reissue Claims Do Not Have to Include Levers in Order to Be for the Same Invention as the Original Patent.

A consideration of the issue of invention and the relationship of appellant's contribution to the art, will clarify another phase of the matters touched upon in this Honorable Court's decision in the *Associated* case. Had the claims here at issue been in the original patent, it does not appear that this Honorable Court would have held that the operating members must be specifically *levers* if the claims were to be infringed. The judicial limitation of appellant's claims to combinations including a lever appears to have been based upon the theory that claims in a reissue patent must be strictly limited to the exact form of structure shown in the original patent. At least, that

¹³The Knox patent in suit in the *Six Wheel* case says (p. 1, lines 64 to 67) :

"The springs 3 are pivotally secured to the frame 1 at one end thereof by any suitable means, such as a spring hanger (not shown) of any suitable or desirable construction."

is the ultimate significance of this Honorable Court's decision in the *Associated* case. Such an interpretation, however, runs counter to the entire theory of reissues, as will hereinafter be shown.

In its decision in the *Graver* case, the Supreme Court quoted with approval from the following paragraph of the decision of Judge Learned Hand in *Royal Typewriter Co. v. Remington Rand, Inc.*, 168 F. 2d 691, 692:

“. . . a patent is like any other legal instrument; but it is peculiar in this, that after all aids to interpretation have been exhausted, and the scope of the claims has been enlarged as far as the words can be stretched, on proper occasions courts make them cover more than their meaning will bear. If they applied the law with inexorable rigidity, they would never do this, but would remit the patentee to his remedy of re-issue, and that is exactly what they frequently do. Not always, however, for at times they resort to the ‘doctrine of equivalents’ to temper unsparing logic and prevent an infringer from stealing the benefit of the invention.”

This decision says that some courts would not resort to the doctrine of equivalents to expand a claim “but would remit the patentee to his remedy of re-issue.” The clear inference here is that if the Patent Office passed upon the changed scope of the claims as presented in a reissue, such courts would abide by the Patent Office’s determination as to what the patentee was entitled to. But Judge Learned Hand indicated that the use of the doctrine of equivalents often makes a reissue unnecessary. In the present case, however, a reissue had already been obtained before suit was brought, and appellant therefore only asks that the claims, *as allowed by the Patent Office, be literally*

interpreted. None of these claims is restricted to a lever —in fact, claims 7 and 8 do not mention any kind of an operating member whatever.

In its *Associated* decision this Honorable Court, instead of accepting the Patent Office's determination that appellant is entitled to such claims, specifically limited and restricted them to the exact structure considered to have been covered in the original. As authority for this procedure, this Honorable Court cited the statement in *U. S. Industrial Chemicals, Inc. v. Carbide and Carbon Chemicals Corp.*, 315 U. S. 668, that "It must appear from the face of the instrument that what is covered by the reissue was intended to have been covered and secured by the original." In making this statement, the Supreme Court certainly did not mean that reissue claims could not be broad enough to cover equivalents of the elements shown in the original. Such claims are proper in all patents, and there is no discrimination against reissues in this respect. The thing the court objected to in the *U. S. Industrial Chemicals* case was not an attempt to cover equivalents, but an attempt to eliminate from a process claim a step that had been stressed as essential in the original patent.

Where the terms in reissue claims have been made broad enough to cover mechanical equivalents of the elements shown in the drawings, an attempt to limit them by interpretation to the precise form shown in the drawings, would run counter to the very theory of reissues. Tersely stated, the situation then illogically would become just this: If the patentee does not obtain a reissue, the court will apply the doctrine of equivalents to give him the protection to which he is entitled; but if he goes to the Patent Office to have his patent reissued with claims that are

broad enough to include the equivalents to which the prior art entitled him, then the court, because it is dealing with a reissue patent, will restrict the terms to the specific structure shown in the original patent.

Reissue claims may be made broad enough to include equivalents excepting where the right to such reissue "is lost by long lapse of time." *Walker on Patents*, Deller's Edition, Vol. II, p. 1361, explains the rule thus:

"§315. Whether a patentee, in effecting a reissue, may describe an equivalent of one of the elements of the originally patented combination, and may claim the combination broadly enough to cover that equivalent, is a question which depends upon the effect, in particular cases, of the application of the rule in *Miller v. Brass Co.* (see §323). Where such a reissue is applied for promptly after the granting the original patent, it may be sustained [*McArthur v. Supply Co.*, 19 Fed. 263, C. C., S. D. N. Y. (1884)]; but the right time to obtain such a reissue, is lost by long lapse of time after the date of the original and before the application for that reissue"

The time limit fixed in *Miller v. Brass* was two years. In the instant case, the application for reissue was filed 3 months and 8 days after the original was granted [top of R. 777]. There was thus no such lapse of time as would deprive Leishman of his right to cover his combination broadly enough to include equivalents of the parts shown.

In examining the disclosure in the setting of the prior art, as recommended in the *Royal Typewriter* decision favorably cited by the Supreme Court, it is clear that the nature of the operating means is entirely immaterial to appellant's invention. From the discussion of the equiva-

lency of plungers and levers in preceding portions of this brief, it is plain that the Patent Office, in allowing claims broad enough to cover both, granted appellant only that to which he was clearly entitled. The Patent Office has thus properly applied the doctrine of equivalents, and "the manual movable operating member" does not have to be a lever in order for the reissue claims to be for the same invention as the original patent.

The decision of the Patent Office as to the propriety of the reissue is of a far more binding nature than the grant of an original patent, for the Supreme Court said in *Seymour v. Osborne, supra* (p. 543):

"Where the commissioner accepts a surrender of an original patent and grants a new patent, his decision in the premises, in a suit for infringement, is *final and conclusive*, and is not re-examinable in such a suit in the Circuit Court, unless it is apparent upon the face of the patent that he has exceeded his authority, that there is such a repugnancy between the old and the new patent that it must be held, as a matter of legal construction, that the new patent is not for the same invention as that embraced and secured in the original patent." (Emphasis added.)

There is no such repugnancy in the instant case, for the original and reissue specifications, as well as the drawings, are identical.

After the Patent Office, in granting the reissue, has redetermined the scope of the protection to which the patentee is entitled in the light of his disclosure and the doctrine of equivalents, the new claims *cover the mechanical equivalents of each of the respective elements*, for that is the way the *reissue* claims are construed in the portion of the *Seymour v. Osborne* decision to which the

Supreme Court makes reference in the *Graver* case. The cited portion of the *Seymour v. Osborne* decision dealing with reissues, reads as follows (11 Wall. 516, 556):

“* * * Mere formal alterations in a combination in letters patent, however, are no defence to the charge of infringement, and the withdrawal of one ingredient from the same and the substitution of another which was well known at the date of the patent as a proper substitute for the one withdrawn, is a mere formal alteration of the combination if the ingredient substituted performs substantially the same function as the one withdrawn.” (Emphasis added.)

In reissue claims, the terms thus cover the mechanical equivalents of each of the respective elements, and the terms are not to be construed by interpretation to cover only the specific forms shown in the original patent.

None of the claims at issue calls for a lever.

Claims 7 and 8 do not even include the operating means as an element; but in claims 9, 10 and 11 the operating means is described as “a manually movable operating means” or “a manually movable operating member.” Any kind of operating member thus meets the requirements of the claim. This, of course, is as it should be, because appellant’s invention clearly has nothing whatever to do with the operating member. The prior art showed that plungers, levers, pull rods [Morin, R. 1172] and strings [Heath, R. 800] had been used for this purpose. In permitting Leishman to refer to the means that performs the function of moving the tappet as “a manually movable operating member” or “manually movable operating means,” the Patent Office thus permitted the use of terms that would include all the equivalents to which the prior art entitled him. The last expression of the Supreme

Court on the subject of equivalents, shows that the Patent Office acted properly.

But even if all the claims had specifically referred to the operating means as *a lever*, infringement would still be present, for this Honorable Court would then be required to "resort to the 'doctrine of equivalents' to temper unsparing logic and prevent an infringer from stealing the benefit of the invention"—to use the words of Judge Learned Hand in the *Royal Typewriter* case, *supra*, which the Supreme Court in its *Graver* decision has quoted with approval.

General Motors admits that it has appropriated the coaxial rocker-and-tappet construction and discarded its own prior developments. It has stolen the benefit of appellant's invention, and this Honorable Court should so rule.

6. In Unguarded Moments of Candor, Appellee Admits That the Substitution of a Plunger for a Lever Does Not Constitute a Valid Distinction.

That appellee fully realizes it is immaterial to appellant's patented combination whether the operating member is a lever or plunger, is shown by unguarded statements made by appellee's expert Schwarz at the trial and by counsel for appellee in some of its briefs before the lower court. These statements reveal that appellee is well aware that there is no valid distinction between a lever and a plunger for operating automatic tuners. In discussing the General Motors rack tuner [Pltf. Ex. 3], Schwarz made the following statement [R. 388]:

"Continuing with this (indicating), we then took the Schaffer tuner, which was available to us on RCA patents, and modified it and made it a recti-

linear push-button type as exemplified by Plaintiff's Exhibit—

Q. 3? A. 3 * * *

Plaintiff's Exhibit 3 rack tuner employed a tappet that was mounted *on a rectilinearly movable plunger*, while the tappet in Schaefer's rack tuner *was moved by a lever*. But General Motors nevertheless says that its plunger-operated rack tuner *was the Schaefer tuner*; and it did not urge that its use of a plunger instead of a lever created a distinction that gave General Motors the right to use the rack construction; it used the rack construction because it "was available to us on RCA patents." General Motors has made no arrangement with Leishman to use the coaxial tappet-and-rocker construction, yet it uses this construction anyway, contending in Leishman's case that the use of a plunger avoids infringement. It apparently makes a great deal of difference whether the patent is controlled by a large corporation that cannot be bamboozled, or by a private citizen that may be imposed upon.

In the Trial Brief on Behalf of Plaintiff [R. 40], counsel for appellee also refers to

" . . . the Zenith tuner which came upon the market and was sold for two years during 1929 and 1930 (dfts. Exs. H and I, R. 313) which was patented as Schaefer patent No. 1,906,106 (ptfs. Ex. 18, R. 475), and which later reappeared in the form of a General Motors push button automatic automobile radio tuner (ptfs. Ex. 3, R. 327), of which approximately five hundred thousand were sold during the years 1939 and 1940 (R. 324)." (Emphasis added.)

Appellee's counsel thus contends that although the General Motors Exhibit 3 tuner is operated *by a plunger in-*

stead of a lever, as shown in the Schaefer patent, the General Motors Exhibit 3 tuner is nevertheless still the Zenith tuner.¹⁴ The same recognition of the immateriality of lever or plunger operation appears later in the same "Trial Brief on Behalf of Plaintiff" where reference is further made to

" . . . the Schaefer tuner, *made over from lever form to plunger form* into the General Motors tuner plaintiff's Exhibit 3 . . ." [R. 40, Emphasis added.]

If the General Motors Exhibit 3 tuner is the Schaefer tuner "made over from lever form to plunger form," as appellee's counsel contends, then the General Motors plunger-operated coaxial rocker-and-tappet tuners are the Leishman tuner *made over from lever form to plunger form.*

These definite admissions as to the equivalency of plungers and levers for operating automatic tuners, must

¹⁴Schaefer refers to his operating levers as *keys* [R. 791, lines 71 to 88.] They are keys that pivot, or turn. The plungers in Plaintiff's Exhibit 3 tuner are *pushing keys*. It was long ago adjudicated that one is the equivalent of the other. In *Bundy Mfg. Co. v. Detroit Time-Register Co.*, 94 Fed. 524, 538 (C. C. A. 6), the court said:

"* * * Whether his key actuated the feeding and printing mechanisms by being *turned* or *pushed* is not of the essence of the invention. *Pushing keys* setting in motion bolts and other mechanisms were old, and but the equivalent of keys which did the same thing by *turning*." (Emphasis added.)

In *New Departure Bell Co. v. Hardware Speciality Co.*, 69 Fed. 152 (C. C. N. J.), the court adjudicated specifically that when a claim calls for a *lever* as the operating element, a *push bar* is the *manifest mechanical equivalent* (p. 156) :

"* * * In this patent is to be found all the elements of this Rockwell claim, combined and operating in substantially the same way and for the same purpose, with the single exception that the *operative push bar* of the French patent—of which the *lever* of the claim is the *manifest mechanical equivalent*—has a vertical action instead of a horizontal movement." (Emphasis added.)

be held against appellee. They show that there is no substance whatever to appellee's defense to the charge of infringement.

7. **Statements in the Complaint Simplify the Application of the Claims to Appellee's Tuners.**

Plaintiff's Exhibit 2 with the complaint was introduced in evidence as Defendant's Exhibit JJ. The issue of infringement with respect to this tuner is somewhat simplified by the averment in the complaint [R. 6] that this tuner is the same, insofar as the subject matter of the claims at issue is concerned, as the tuners shown in its Exhibits 3, 4 and 5, which are drawings attached to the complaint. The tuner shown in the Exhibit 3 drawing is the Crosley tuner that was involved in the Associated case. The Ninth Circuit Court of Appeals in that case found that the rocker and tappet in that tuner were the equivalents respectively of the rocker 48 and the tappet 61 of the reissue patent in suit. At page 727 of its decision, the appellate court said:

“* * * It has a rocker which is the equivalent of appellant's rocker 48 . . . It has tappets each of which is the equivalent of appellant's tappet 61.”

8. **The Claims Applied to Plaintiff's Tuners Exemplified by Defendant's Exhibit JJ.**

The application of claim 7 to plaintiff's tuner identified as Defendant's Exhibit JJ is as follows:

(a) “In combination with the tuning mechanism of a radio apparatus.” This is the preamble portion of the claim and defines the combination as one related to the operation of a tuning mechanism. Such a mechanism is present in the three rods or cores that

move together as a unit in and out of the tubes in the metal containers at the top of the exhibit.

(b) "of a rotatable rocker mounted upon a shaft operatively connected with said mechanism, said rocker having two arms each extending on a different side of said shaft;" the Circuit Court of Appeals said that the rocker in the accused device in the *Associated Wholesale* case was the equivalent of this rocker, and the plaintiff admits that Defendant's Exhibit JJ is the same as far as this claim is concerned as the tuner in that case.

(c) "means adjustably movable about a pivot¹⁵ and acting upon bodily movement in one direction to slidably engage either arm of said rocker and push it in one direction to an angular position at which the movement of said rocker is arrested by the collision of said means and the oppositely moving other arm of said rocker;" This is the tappet that engages the rocker in this exhibit, the tappet being "adjustably movable" about its pivot, or center of rotation. The Circuit Court of Appeals said that the tappet in the accused device in the *Associated Wholesale* case was

¹⁵The statement is made in footnote 14 of the *Associated* decision that "neither tappets nor levers are mentioned in these claims. Instead, claims 7 and 8 speak of 'means adjustably movable about a pivot;'" In this connection it might be pointed out that while the term "tappet" was used a good deal at the trial and in the present memorandum, as well as in the specification of the patent, this term is probably not the best nor the most logical one for the member to which it has been applied. This element is seldom called a tappet in the industry. It is more often called a "cam" or a "striker." Schaefer called the tappet a "rocker" [R. 793, line 37], while Lane and Mackey used the term "cam member" [Deft. Ex. K]. Marschalk called it a "plate" [R. 826, col. 1, line 65, *et seq.*] To avoid confusion, the part that we have called a *tappet* has been referred to in the claims in more definite terms which describe its nature or purpose in the combination.

the equivalent of the corresponding tappet shown in the patent, and the plaintiff admits that its entire tuner is the same as the accused tuner in the former case insofar as these claims are concerned.

(d) "and a spring for holding said means in a normally inoperative position;" Such a spring is attached to the bottom of each of the plungers in this exhibit for pulling the plunger back to hold the tappets in a normally inoperative position away from the rocker.

(e) "said rocker constructed so as to admit at least a portion of said means between said arms."

This is a further description of the rocker, already shown to have been found by the Circuit Court of Appeals in the former accused device, of which the plaintiff admits that its tuner is a counterpart.

Claim 8 is similar to claim 7, except in the concluding phrase which specifies "the axis of said means being substantially coaxial with the axis of said rocker when said means is in engagement with both of said arms." This claim has been limited by the disclaimer printed on the back of the patent to restrict the rocker to one that is so constructed that it may act as a common follower for a plurality of such recited movable means. This provides that the rocker be of such form as to accommodate a number of station selecting members, as in all the accused tuners. Since the rocker of the accused tuner in the *Associated Wholesale* case was held to be the equivalent of the rocker shown in the patent, it is needless to go into further detail.

Claim 9 may be read upon the accused structure as follows:

(a) "In a mechanism for angularly positioning a control of a radio device, a combination including:" In plaintiff's tuner under discussion, the rocker must be angularly positioned in order to move the three rods just the right distance inside of the tubes.

(b) "a rotatable rocker comprising two shoulders lying on opposite sides of the axis of said rocker;" The rocker of the accused tuner in the previous case having been held the equivalent of this rocker, and the plaintiff having stated in the complaint that its Exhibit 2 (now Defendant's Exhibit JJ), is patent-wise the same, this element is manifestly present in the plaintiff's tuners.

(c) "and a manually movable operating means comprising an adjustably mounted positioning element adapted upon movement of said means in one direction to engage one shoulder of said rocker and rotate said rocker to a position at which the movement of said element is arrested by the collision of said element and the oppositely moving other shoulder of said rocker"; This latter refers to the tappet member which is manually movable by any suitable means, such as by a lever or a plunger.

(d) "said rocker constructed to permit at least a portion of said means to pass beyond a line connecting the points on said shoulders at which the shoulders are contacted by said means." This again refers to structural details of the rocker, but in view of plaintiff's admissions and the holding of the Circuit Court of Appeals that the rocker of the former accused device is the equivalent of the corresponding rocker of the patent, it is pointless to go into further detail.

Claim 9 has been further limited by the disclaimer on the back of the patent to specify that the adjustment of the positioning element or tappet is such that the positioning element may be fixed and maintained in its position irrespective of repeated operations of said operating means. The structure is of course shown in the patent, and since the tappet of the former accused device was held to be the equivalent of the tappet shown in the patent drawing, the tappet of the present accused tuners is manifestly also the equivalent in view of plaintiff's admissions.

Claim 10 may be applied to the accused structure as follows:

(a) "In a mechanism for angularly positioning a control of a radio device, a combination including:" This is the same as the preamble of claim 9, already discussed.

(b) "a rotatable rocker comprising two shoulders lying on opposite sides of the axis of said rocker;" The Circuit Court of Appeals found this rocker in the previously accused device, and the complaint states that Plaintiff's Exhibit 2 [now Defendant's Exhibit JJ] is the same insofar as these claims are concerned.

(c) "a manually movable operating member;" The plaintiff's plunger is obviously a manually movable operating member.

(d) "and a positioning element adjustably mounted on a pivot carried by said member; said element adapted upon movement of said member in one direction to engage one shoulder of said rocker and rotate said rocker to a position at which the movement of said rocker is arrested by the collision of said element and the oppositely moving other shoulder of said rocker"; This refers to the tappet and its func-

tion. The previous holding of the Circuit Court of Appeals with respect to the tappet is *stare decisis* in the present case, no new evidence being presented to the contrary on this point.

(e) “the axis of said element and the axis of said rocker being substantially coaxial when said element is in engagement with both of said shoulders.” Here again the admitted sameness of the present and previous tuners makes the appellate court’s holding apply equally to this case regarding the rocker and tappet.

Claim 10 has been limited by disclaimer in the same regard as claim 9.

Claim 11 also clearly reads upon the accused structures as follows:

(a) “In a mechanism for angularly positioning a control or a radio device, a combination including:” This is the same preamble used in claims 9 and 10, and has therefore already been discussed.

(b) “a rotatable rocker comprising two arms lying on opposite sides of the axis of said rocker;” The previous holding is applicable here with respect to the rocker.

(c) “a manually movable operating member;” This is the manually movable plunger and push button.

(d) “a positioning element adjustably mounted on a pivot carried by said member; said element adapted upon movement of said member in one direction to engage one arm of said rocker and rotate said rocker to a position at which the movement of said rocker is arrested by the collision of said element and the oppositely moving other arm of said rocker”; As in claim 10, this refers to the tappet and its function. The

previous holding of the Circuit Court applies with respect to the tappet.

(e) "said rocker having a recess between said arms so that the axis of said element and the axis of said rocker may be substantially coaxial when said element is in engagement with both of said arms"; Inasmuch as this pertains to the tappet and rocker, the previous holding is controlling with respect to its application here, no contrary evidence having been presented.

(f) "and means operable from the external end of said member for holding said element in adjusted position." In the accused structure this means is operable from the external end by pushing or pulling on the button—a variation which the plaintiff admits to be immaterial because the complaint asserts that Exhibit 2 [now Deft. Ex. JJ] is the same as the tuner in the Associated case insofar as the claims here at issue are concerned.

Inasmuch as the admissions of the complaint and the positive proof of the equivalency of plungers and levers make it impossible for the plaintiff to deny that its Exhibit 2 filed with the complaint responds to the requirements of these claims, the tuners exemplified by this exhibit must be held to infringe all the claims at issue—that is, claims 7 to 11, inclusive.

9. The Claims Applied to Plaintiff's Tuners Exemplified by Defendant's Exhibits LL and NN.

Plaintiff's other type of tuner, exemplified by Defendant's Exhibits LL and NN, differs from the General Motors tuner just considered in that the phantom axis is in the tappet rather than in the rocker, and the plunger part is operated by a lever.

Such changes as putting the central recess in the tappet instead of the rocker of course does not avoid infringement. This well-established principle of law is stated as follows in 48 *Corpus Juris* 309, section dd.:

“Where there is no change in function and no substantial change in operation, infringement is not avoided by a mere transposition, rearrangement, or change in location of parts or elements, such as a mere reversal of position or operation.”

Claims 8 and 10 read squarely upon Defendant's Exhibits LL and NN.

The application of claim 8 is as follows:

(a) “The combination with the tuning mechanism of a radio apparatus.” This is the structure at the top of the exhibits containing the tubes and the iron cores that move in and out of the tubes.

(b) “of a rotatable rocker mounted upon a shaft operatively connected with said mechanism,” This is the rocker with the central shaft operatively connected with the tube and core mechanism by means of the side links, the cross bar and the three wires.

(c) “said rocker having two arms each extending on a different side of said shaft:” These arms are the two bars on opposite sides of the central shaft. The rocker responds to the restriction in the disclaimer in the manner described when this claim was read upon Defendant's Exhibit JJ.

(d) “means adjustably movable about a pivot and acting upon bodily movement in one direction to slidably engage either arm of said rocker and push it in one direction to an angular position at which the movement of said rocker is arrested by the collision

of said means the oppositely moving other arm of said rocker;" This is the tappet which, when loosened, is adjustably movable about its pivoting point or phantom axis. When tuning a station, this tappet slidably engages the nearest arm of the rocker and pushes it in one direction to an angular position at which the movement of the rocker is stopped by the collision of the tappet with the other arm of the rocker, which, being on the other side of its rotational axis, is oppositely moving.

(c) "and a spring for holding said means in a normally inoperative position;" These are the springs attached to the plungers at the bottom, and they hold the adjustable means (the tappet) in a normally inoperative position out of engagement with the rocker.

(d) "the axis of said means being substantially coaxial with the axis of said rocker when said means is in engagement with both of said arms." The coaxial arrangement of the tappet and rocker when in complete engagement was admitted by plaintiff's expert Schwarz [R. 348] in reference to Exhibit 1 with the complaint. This exhibit is the same as Defendant's Exhibit LL [R. 246].

Claim 10 reads upon Exhibits LL and NN as follows:

(a) "In a mechanism for angularly positioning a control of a radio device, a combination including:" This is the preamble setting forth the general nature of the structure and stating its purpose.

(b) "a rotatable rocker comprising two shoulders lying on opposite sides of the axis of said rocker;"

Here the arms running along opposite sides of the rocker are referred to as "shoulders."

(c) "a manually movable operating member; * * *" This is the short operating lever, which is manually movable by pressing in the button or key.

(d) "and a positioning element adjustably mounted on a pivot carried by said member;" This is the tappet which positions the rocker and it is adjustably mounted on the circumferential pivot carried by the plunger operated by the short lever.

(e) "said element adapted upon movement of said member" (the lever or plunger) "in one direction" (toward the rocker) "to engage one shoulder of said rocker and rotate said rocker to a position at which the movement of said rocker is arrested by the collision of said element and the oppositely moving other shoulder of said rocker;" The obvious application of this terminology is the same as in claim 8, previously discussed.

(f) "the axis of said element" (the phantom axis of the tappet) "and the axis of said rocker being substantially coaxial when said element is in engagement with both of said shoulders." The substantially coaxial arrangement of the tappets and rocker in the completely engaged position was admitted by Mr. Schwarz at the trial.

Claim 10 responds to the limitation in the disclaimer printed on the back of the patent in the same manner as does the tappet in the *Associated* case, which was held to be the equivalent of the tappet shown in the patent.

In the other claims, the application of the terminology to Defendant's Exhibits LL and NN is the same as in claims 8 and 10 excepting for the concluding phrases.

Claim 7 concludes: "said rocker constructed so as to admit at least a portion of said means" (the tappet) "between said arms" (of the rocker). In Defendant's Exhibits LL and NN there has been a mere reversal of this arrangement. Plaintiff's rocker is constructed so as to admit at least a portion of the central shaft of the rocker between the arms, or contact points, of the tappet. One or both of these parts must be shaped to fit the other in order to obtain the advantages of the coaxial relationship in the fully engaged position. Either one, or both, must have a central opening. To construct the tappet to admit at least a portion of the rocker rather than the rocker to admit at least a portion of the tappet, cannot avoid infringement. If such variations could circumvent a patent, no patent would have any value. The following decisions show the application of the law on this point:

"The expression 'reversal of parts' is not regarded as meaning literally a precise opposite positioning of all the parts of a patented invention. New parts differently positioned may be found in an infringing device which perform the functions and produce the results of parts of the invention, yet the device of a patent and an infringing device may not show any physical resemblance one to the other. This was particularly true of the contesting devices in Union Special Machine Co. v. Singer Machine Co. (C. C. A.) 227 F. 858. Placed side by side they looked wholly unlike, yet the theory of the invention could, after study, be traced and found in the wholly dissimilar parts of the infringing machine and there could be discerned the capital idea of the patent, which was a stop carried on a moving part of a sewing machine which prevented an unsafe needle shift when in the fabric and permitted a safe shift when

out of the fabric. And so here, we can trace and find in the defendant's device the capital idea of the inventor with means in changed positions—with the partial omission of one."

Allen et al. v. Wingerter, C. C. A. 3, 17 F. 2d 745 at 747.

"The only question presented, therefore, is whether appellant avoids infringing by placing the abutment member P and S on the slide instead of on the guide, and by forming the elongated slot D in the guide instead of the slide, and we are convinced that the question must be answered in the negative. In appellant's devices there is a mere reversal or transposition of parts used in the patent, but they produce the same functions in substantially the same way, and accomplish the same result as the patent. Infringement is not escaped by a mere change of forms without change of function. (Quoting many decisions.)"

Chicago Lock Co. v. Tratsch, et al., C.C.A. 7, 72 F. 2d 482 at 485.

Claim 9 concludes: "said rocker constructed to permit at least a portion of said means to pass beyond a line connecting the points on said shoulders at which the shoulders are contacted by said means." The plaintiff has constructed the tappet to permit at least a portion of the central shaft of the rocker to pass beyond a line connecting the said points of contact. This is the same sort of obvious reversal mentioned in the last of the quoted decisions.

When considering claim 11, the plaintiff's reversal applies to the structure mentioned in next to the last clause, which reads: "said rocker having a recess between said

arms so that the axis of said element and the axis of said rocker may be substantially coaxial when said element is in engagement with both of said arms;" In plaintiff's reversed arrangement, the recess is in the tappet instead of the rocker. The law with respect to such alterations will not permit the plaintiff to benefit by this kind of obvious change.

The last clause in claim 11 calls for "means operable from the external end of said member for holding said element in adjusted position." This, of course, is the adjusting or clamping means, and it is operable from the external end of said member (the lever or plunger) by raising up the lever button. The adjusting screw is a telescoping assembly, and a spring causes the knurled end of the screw to flip out for easy turning by the fingers of the operator so that after adjustment the screw may be tightened "for holding said element" (the tappet) "in adjusted position." This arrangement in Defendant's Exhibits LL and NN literally meets every requirement of the claim.

Defendant's Exhibits LL and NN are thus as much infringements as Defendant's Exhibit JJ.

The matter of whether the operating member necessarily needs to be a lever, does not arise with respect to plaintiff's tuners exemplified by Defendant's Exhibits LL and NN, because these tuners are operated by levers. The operating levers and the plungers that carry the tappets are made in two parts, instead of being integral as illustrated in the patent; but such division of parts does not avoid infringement. In this connection, *Corpus Juris*, Vol. 48, at page 309, states:

"Likewise infringement is not avoided by the division or separation of an integral part or element into two or more parts or elements, where the same work is done, or, in other words, the same function is performed or the same result is produced in substantially the same way or manner."

Both of appellee's tuners must then be held to infringe the claims at issue.

V.
Conclusion.

This brief has shown that there had been a demand in the radio industry for many years for a satisfactory automatic tuner and that numerous inventors all over the world had endeavored to provide such a tuner before defendant's teachings became available. Many inventors tried to solve the problem by providing an adjustable tappet for positioning the rotatable control, but a peculiar difficulty arose that required the addition of extra parts or the use of tedious methods for adjusting the tappet. Unless such expedients were used, whenever a tappet was being set for a station near either end of the broadcast band, the tappet and positionable control would both turn upon engagement of the loosened tappet with the positionable member. Defendant prevented this unwanted rotation by making the axis of the tappet coaxial with the axis of the positionable control (rocker) when these members are completely engaged.

Defendant's solution of the problem was simple and effective and did not add any extra parts. Not only was defendant's solution unobvious to the many engineers and inventors who worked on adjustable tappet tuners, but plaintiff's own expert, Mr. Schwarz, was unable to point

to any instance in his long experience in which rotation of two members had been prevented by making their axes coaxial.

Defendant's construction was immediately adopted on a wide scale both for household and automobile sets and the plaintiff alone has made more than a million of them.

The evidence clearly establishes the presence of invention and proves the validity of the claims at issue.

There is no question that plaintiff has appropriated defendant's coaxial rocker and tappet construction.

It was shown at the trial by *undisputed* evidence that it makes no difference whatever by what means or what route the tappet is brought into engagement with the rocker, and that it is thus immaterial whether the tappet is moved by a plunger moving in a rectilinear path, or whether the tappet is moved in a curvilinear path as in the case when the operating member is a lever. None of the evidence presented on this point was before the court in either of the previous cases in this circuit involving this patent.

Plaintiff's tuners fully respond to the claims at issue.

Infringement is thus fully established.

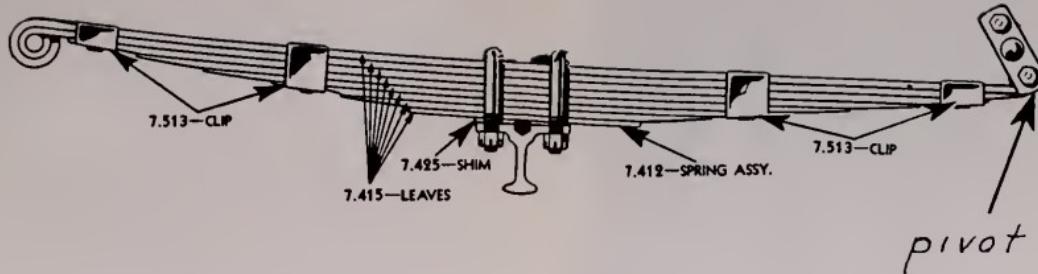
The evidence clearly requires that this Honorable Court hold the claims valid and infringed.

Respectfully submitted,

LEROY J. LEISHMAN,

Appellant, Pro Se.

JOHN FLAM,
Counsel.



Leaf Spring pivots like a lever



COIL SPRING

Coil Spring moves in straight line like plaintiff's plungers

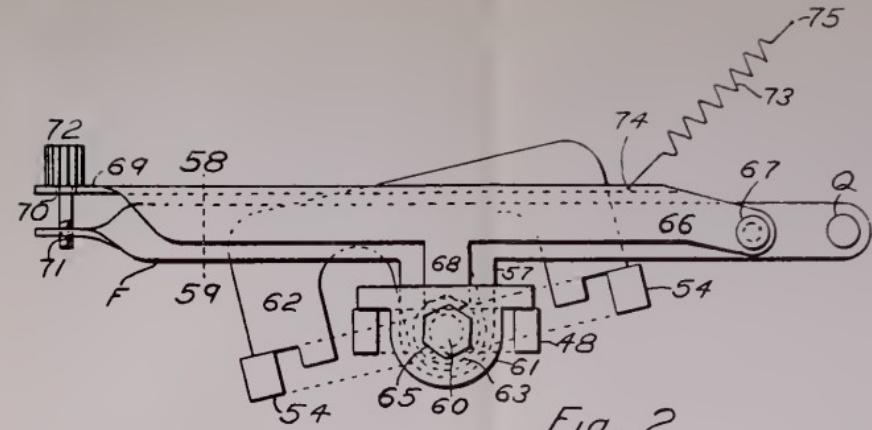
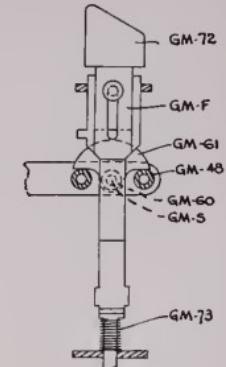


Fig. 2



*Plaintiff's
Exhibit 2 Tuner
(left)*







APPENDIX.

I.

Supplementary Discussion of the Opinion of the Court of Appeals for the Tenth Circuit in Leishman v. the Richards and Conover Company.

The present record contains ample evidence that appellant's solution to the "creeping" problem was not obvious to mechanics skilled in the art, and it is thus an established fact that a mechanic would not arrive at appellant's solution by means of such an analysis as that undertaken by the Court of Appeals for the Tenth Circuit. The decision of the said appellate court nevertheless influenced the court below. It may therefore be well to point out some of the more flagrant errors in the Tenth Circuit opinion.

The said opinion states (172 F. 2d 365 at 370):

"On rehearing, counsel for Leishman urged that the cause of creeping in Marschalk's device is obscure; and that neither such cause nor the solution of the problem would readily occur to a mechanic skilled in the art."

The court then refers to two figures prepared by the court and appearing on page 90 of the present record. These figures are intended to illustrate the Marschalk device; the rocker I, tappet J, lever H, and pin A for the tappet are intended to represent the corresponding parts 34, 44, 37, and 46, respectively, in Marschalk.

The opinion then goes on to explain why there is "creeping" in such a device. It stresses, for example, the relative position of pin A and an imaginary line XY, a line having no counterpart in Marschalk; nor does the Marschalk tappet have an apex. No reason is given why such a relation of the pin A, line XY, and the apex of

tappet J is important; in fact, there is no pertinence to it whatever.

The irrelevance of the position of the apex was emphasized in the affidavit of S. F. Duncan, Professor of Mechanical Engineering at the University of Southern California, as follows [R. 80-81]:

“The Court’s analysis of the lever system purported to be shown by Figs. 1 and 2 of the decision is the result of first, an imperfect understanding of the basic laws governing levers and second, the singular shapes accidentally or intentionally chosen by the draughtsman who drew the figures. It is a well known principle, as evidenced by the wide adoption of such text books as

1. Analytical Mechanics for Engineers by Seely and Ensign (John Wiley and Sons).
2. Kinematics of Machines by Guillet (John Wiley and Sons).
3. Elements of Mechanism by Schawb, Merrill & James, 6th Ed. Revised by Doughtie (John Wiley and Sons).
4. Kinematics of Machinery by Albert & Rogers (John Wiley and Sons).

that only the contour of contacting surfaces of interacting parts of a mechanism and not the shape of the rest of the contacting parts determines the transmittal of forces and any tendencies toward relative motion. Thus in Figs. 1 and 2 of the decision the tappet J was uniquely drawn as a triangle of a certain shape and size. In the decision, reliance appears to have been placed on the position of vertex G, Fig. 1, in the sentence which reads, ‘And when the rocker and tappet are positioned as in Fig. 1, the vertex G of the tappet, instead of being approximately at the line

XY, as in Fig. 2, is to the left of such line—.' Since the vertex G referred to has no functional contact with the rocker, I, Figs. 1 and 2, its location in space cannot influence the relative motion of the rocker and tappet."

The said opinion further says (172 F. 2d at page 371):

"When the rocker and the tappet are positioned as in figure 1, pin A is a greater distance above the axis of the rocker shafts and a greater distance to the right of the vertical line XY than when the rocker and tappet are positioned as in figure 2."

This condition, to which the Court later attaches great significance, is apparent only because the Court has made grievous errors in its drawings that a mechanic would never make. It will be noted that the Court has inadvertently placed the pin A in the wrong place in its Fig. 1. The tappet, of course, could not change its construction in turning from the position shown in Fig. 2 to the position shown in Fig. 1. The pin A would, accordingly, be exactly the same distance away from the lower edge of the tappet in both Figs 1 and 2. To demonstrate the serious error that misled the Court, a circle has been drawn around the pin A in Fig. 2 on the photographic reprint of the court's Figs. 1 and 2, appearing on page 1183 of the present record, the circle being of such size that its lower edge comes exactly to the edge of the tappet. A circle of exactly this same size has been drawn around the pin A in the Court's Fig. 1. It will be noted that this circle comes a very long way from the edge of the tappet. This large error in the Court's drawing is what makes the axis of the tappet and the axis of the rocker seem so much further apart in its Fig. 1 than its Fig. 2.

To show that the Court's conclusions about these axes are largely the result of the serious errors that it has made in endeavoring to simulate what a skilled mechanic would do, the tappet and rocker of Fig. 1 have been properly redrawn as Fig. 3 between the two figures from the opinion. It will be noted that the rocker is tilted at exactly the same angle as in the Court's Fig. 1, but the tappet has been correctly drawn so that the pin A is precisely the same distance from the lower edge of the tappet as it is in Fig. 2, as shown by the circle around the pin. When the figure is thus accurately laid out, the variation in the distance between the axis of the tappet and the axis of the rocker in Figs. 2 and 3 is barely discernible. Yet the grave incongruity in the Court's drawing is made the important reason assigned by the Court for the "creeping", for the Court says (p. 371):

"Since the more the rocker is tilted [as in Fig. 1] the greater becomes the non-coaxiality between the axis [D] of the rocker shafts and pin A and the greater becomes the tendency of the rocker to creep,".

Professor Duncan refers to these serious errors in the drawings as follows [R. 79-80]:

"Referring to Figs. 1 and 2 of the decision it is obvious to me as an engineer that an error in drawing the tappet J in its two positions, along with imperfect understanding of the laws of mechanics as taught in all schools and colleges of Engineering, led to a line of reasoning which contributed to the decision rendered by the Court. The error in drawing is apparent to the naked eye and is that the distance from point A to side BC of the tappet J is considerably different in Fig. 1 from what it is in Fig. 2. This change in the location of point A on the tappet J

would indicate a change in the physical dimensions of the corresponding part in an actual mechanism. Unless such change in dimension actually occurs, conclusions based on the two figures referred to could not be properly applied to the actual mechanism, in this case a tuner."

The supposed reason for creeping, according to the analysis of the Court of Appeals for the Tenth Circuit, was set forth in a single paragraph which was quoted and discussed by A. Paul Sorber in the following portion of his affidavit [R. 86-89]:

"Reference is now made to the following quotation from the aforementioned opinion of the United States Court of Appeals for the Tenth Circuit:

"When the rocker and the tappet are positioned as in Figure 1, the distance from pin A to point B on the upper face of the rocker is greater than the distance from pin A to the point on edge C of the upper face of the rocker where the base of the tappet intersects such edge, referred to hereinafter as point O. And the distance from the axis of the rocker shafts to the point on edge C of the upper face of the rocker where the base of the tappet intersects such edge, referred to hereinafter as point P, is greater than the distance from such axis to point B. Hence, the lever from point P to the axis of the rocker shafts is longer than the lever from point B to such axis, and the level [lever] from point B to pin A is longer than the lever from point O to pin A. As a result, when force is exerted by downward pressure of the lever H through the tappet upon the face of the rocker, the downward force at point O has the advantage of greater leverage than the downward force at point B, and the resisting force of the rocker at

point B has the advantage of greater leverage than the resisting force of the rocker at point O.'

"The author of the foregoing paragraph had an entirely erroneous conception of levers and lever arms. The correct principles of lever arms are taught to science students in high schools, and these principles are contrary to the view held by the author of the above quoted paragraph. The distance from point B to pin A in Figs. 1 and 2 does not represent the 'lever' or lever arms of any of the forces applied. The distance from the point B to the axis D of the rocker is likewise not a correct lever arm. The aforequoted paragraph makes reference to the distances from the axes of the rocker and tappet to the points where these members engage on the right of these axes, but none of these distances referred to in the said paragraph is a true lever arm. The lever, or lever arm, of any force is the distance from the axis or fulcrum to the line of the force, taken at right angles to the line of the force.

"I have attached hereto a reproduction of page 20 from the text, Elements of Mechanism, mentioned on page 2 of this affidavit. [R. 84.] The scientifically accepted and verified principles of levers, as explained on the said page 20, is illustrated thereon by Figs. 23 and 24. These figures graphically show that the distance from the pivot to the point where the force is applied, is not the thing that determines the turning effect of the force. The physical levers are shown in full lines in these figures, but the actual lever arms of the forces applied are represented by the lines from M to C and from N to C in each of the figures. These lever arms in this case are thus much shorter than the distances from the pivots to the points where the forces are applied, and are the same as they would

be for the much shorter physical levers shown in dotted lines if the latter were positioned as shown.

"The errors in the conception of levers and leverage in the forequoted paragraph from the opinion of the Court of Appeals for the Tenth Circuit, are common errors among students who are just beginning the study of mechanics. Sometimes the actual length of a lever arm is only a small fraction of the distance from the axis to the point where the force is applied, and no helpful information whatever as to leverages can be gained by a mere consideration of the distance from a point where force is applied to the axis of the member against which such force is directed."

Professor Duncan also discusses the appellate court's misconception of lever arms. He said [R. 81-82]:

"Referring again to the principle enunciated in the paragraph above [the same paragraph quoted in the foregoing Sorber affidavit] and Figs. 1 and 2 of the decision, the reasoning applied to the supposed lever arms from points P and B to the axis of the rocker shaft and points B and A to pin A is, though erroneous, a direct result of the accidental choice of the relative lengths of the contacting faces of the rocker and tappet. If the tappet face had been drawn longer it could have overlapped the rocker face in both positions and the limits of contact on the rocker face would have been from edge E to edge C [Figs. 1 and 2 of the decision) for all usual positions of the rocker. Such a change in the drawing would not affect the operating principle of the mechanism or its tendency to creep. By similar reasoning the rocker face, though overlapping both edges of the tappet face at all times would not affect the operation of the mechanism but would have required different state-

ments to be made in the decision relative to the supposed lever arms referred to above.

"The reference by the Court to such distances as 'the lever from P to the axis of the rocker shafts' and 'the lever from point B to such axis' must have been prompted by incorrect information or an imperfect knowledge and understanding of the fundamental laws of analytical mechanics."

II.

Dr. Spotts, Expert Witness for the Richards and Conover Company, Did Not Know the Reason for Creeping, and His Theory Can Easily Be Shown to Be Wrong.

The glaring errors in the opinion of the Court of Appeals for the Tenth Circuit are further aggravated by the following statement at page 372 of its decision:

"Counsel for Leishman contend it is manifest that the cause of creeping is obscure because an expert witness for the defendant below testified that if the line of thrust from pin A is either to the left or right of the axis of the rocker shafts, creeping will occur, and that Leishman's physical exhibits 26, 26A, 26B, and 26C [these are the same as Def. Exhs. L, L1, L2 and L3 in the present case] demonstrate that if pin A is not coaxial with the rocker shafts, although the pin travels downward in a line of thrust which intersects the axis of the rocker shafts, creeping will still result.

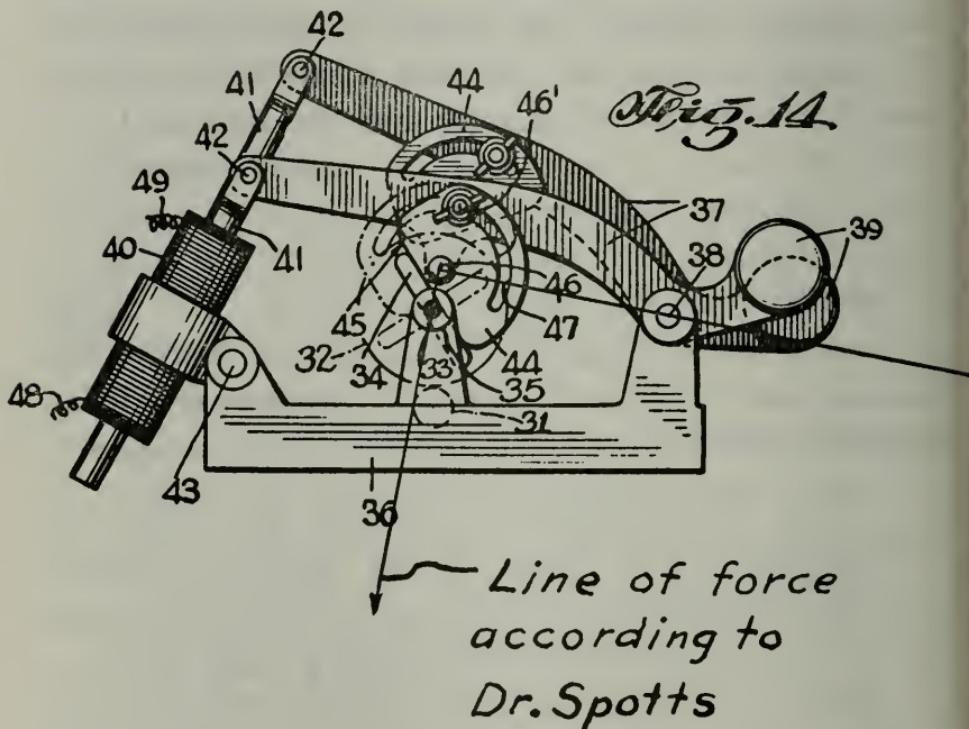
"It is obvious that when the expert so testified he was talking about a force from pin A traveling along

a straight line. In Marschalk's device, pin A travels in an arc."

As a matter of fact, the expert witness was specifically talking about the reasons for creeping in *Marschalk's particular device*. Had the appellate court examined the said testimony, which appears on page 213 of Vol. I of the Richards and Conover record, (which see) it would have found the expert referring to the parts in Marschalk's device by the very same numerals used in the Marshalk patent. The expert opposing the patent in that case was Dr. Spotts, Associate Professor of Machine Design at Northwestern University. To make it easy for the present court to follow his statements, and to verify that Dr. Spotts did not know the reason for creeping, Marschalk's Fig. 14 has been reproduced on page 10 of this appendix, where additional lines have been added to the figure in accordance with Dr. Spotts' instructions. Dr. Spotts testified as follows [page 213 of the printed Richards and Conover record, filed with Plaintiff's Supplemental Brief, and designated as part of the present record on appeal):

"A. The direction of the force that will cause creeping can be found in the following manner: Draw a straight line from pivot 38 to pivot 46. [Such a line has been added to the figure.] Then draw another line at right angles to that line through pivot 46. [This line has also been inserted.] *The force will lie along that perpendicular line.* If it falls to the left of pivot 33 then the rotation of the rocker will be *counter clockwise*. If the perpendicular line on the other one falls to the *right* of pivot 33, then there will be *clockwise motion.*" (Emphasis added.)

It will be seen, however, that the said line of force falls neither to the right nor to the left of the pivot 33, but exactly through the center of the pivot. According to Dr. Spotts' theory, there should thus be *no* rotation in the Marschalk device. But everyone who knows anything about this case knows that there *is* rotation. If the right side of the *rocker* is *up*, there will be clockwise rotation; and if the *left* side of the rocker is *up*, there will be counter-clockwise rotation.



Leishman's patent issued in 1938. The trial of the Richards and Conover case, at which Dr. Spotts testified, took place in 1946—eight years later. Dr. Spotts' testimony shows that even at that late date he did not know the reason for creeping.

III.

Schwarz, General Motors Engineer, Advanced a Third Theory for Creeping Which Can Likewise Be Proven Erroneous.

On page 68 of this brief, it was shown that Schwarz admitted that he knew of no instance anywhere in which a coaxial relationship had been used to prevent unwanted rotation of engaging parts.

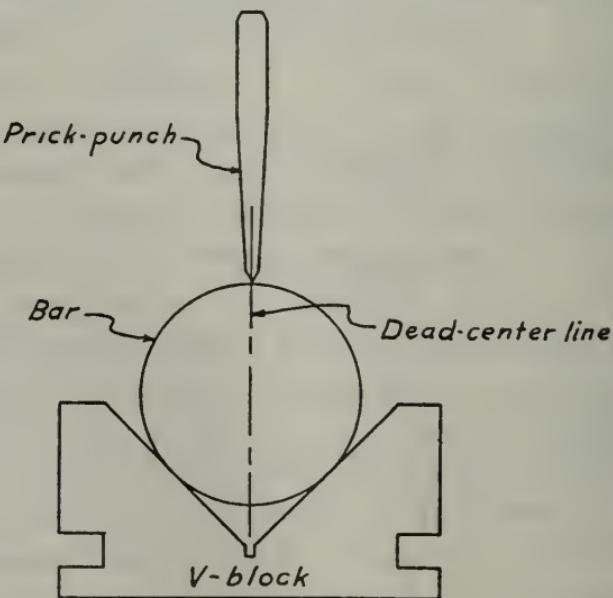
Obviously seriously compromised by Mr. Schwarz' damaging admissions, Mr. Lyon tried on re-direct examination to elicit from Mr. Schwarz an explanation that would make it appear that defendant's use of coaxiality was but the application of principles well-known to mechanics. Mr. Schwarz' elucidation of the allegedly pertinent principles, and his example of how a mechanic would apply them, constitute excellent evidence that such a mechanic would have found nothing in his previous experience to guide him if he had been faced with the problem before Leishman's solution was known. This testimony was as follows [R. 439-441]:

"Q. By Mr. Lyon: Mr. Schwarz, what does this engineering practice of eliminating moments, that technique, have to do with the fact that in this tuner having an adjustable tappet and rocker with coaxiality there is no walking movement of the operating member as demonstrated to the court here?

"A. This application of the old principle of moment arms and how they work and how they function would be in this case to prevent the tappet from jumping around, or, in other words, from moving when it came into relation with the rocker. And that, as I have tried to point out, is application of an old principle to produce a desired result, because without a moment arm the two pieces would either not move, or if actuated would move together.

“Q. If the moments were eliminated would their effect be as you have stated, if two members move that they move together, or if one moves the other will move with it?

“A. I think one is the converse of the other. In other words, if we consider one a transmitting means, and the other a receiving means, if the one was actually in dynamic movement the other would be expected to move with it if they were concentric. But if the one was not in movement and the other came up against it, it would not be considered to move in any other plane or in any other circle, because of the elimination of moment arms. I think I can explain by a simple example, if I may be permitted to do so, to try to make my explanation a little clearer: If a toolmaker, as I said before, had to drill a hole or prick-punch a bar, he would put it in a “V” block and would be sure to punch it in the dead center of that bar, otherwise the bar would move relative to the V block, and that would be the application of moment arms to movement, if he punched or drilled



it in the dead center it would not be expected to move.

“Q. Does a toolmaker practice that technique of eliminating moments in the ordinary course of practicing his profession?

“A. Yes, he does, when he takes a bar and puts it in a drill press, or if he wants to prick-punch it to drill it he puts it in the V block and then hits it or drills it in the dead center right through the center of the bar, and thereby introduces no upsetting moment arms causing no movement of the one relative to the other.”

In order that the court may fully understand this example, a sketch is printed on page 12. It will be noted that this example is in no wise an illustration of a coaxial relationship; in fact, the explanation of the example does not even make such a claim. Mr. Schwarz' explanation is to the effect that if the bar is punched in the dead center, as shown in the sketch, it will not move relative to the V-block. Notwithstanding the fact that no use is made in this example of a coaxial relationship, there is supposed to be something about this example, according to Mr. Schwarz, that would cause such a toolmaker to know that the difficulty exhibited in Marschalk's tuner could be eliminated by making the tappet coaxial with the rocker in the fully engaged position.

Such a toolmaker with a knowledge of a V-block and dead-center punching, might assume that if pressure is applied to a pivoted tappet on a dead-center line with respect to the tilted rocker, no trouble would occur. That the toolmaker would be very badly misled is clear from the demonstration that Mr. Leishman gave at the trial of the dismountable parts marked Defendant's Exhibits L, L-1, and L-3, that may be assembled and disassembled.

Exhibit L-1 is a rocker and L-3 is a non-coaxial tappet. The court will observe that when the rocker is tilted and the non-coaxial tappet L-3 is pressed straight down on a dead-center line, the tappet and rocker both flip around and tend to assume a horizontal position. Pressing down on dead center does not help a bit. But when Leishman's *co-axial* tappet L-2 is used, no trouble whatever occurs. Regarding this, the record says [R. 154] :

“Now, here is a non-coaxial arrangement and you press that down and it immediately flips around the same as the Marschalk device, but this coaxial arrangement solved the difficulty. You see you have no difficulty at all.

“Maybe Your Honor would like to try that.

“The Court: No, I watched you demonstrate it. Let us have those marked for identification.”

The unorthodox thing that Mr. Leishman did when he stopped all rotation of the loosely pivoted tappet and tilted rocker by making the axis of the tappet coaxial with the axis of the rocker, is well illustrated by the fact that Mr. Schwarz was unable to think of anything any more similar than what a toolmaker does when he punches a bar on dead center in a V-block.

Immediately after Mr. Schwarz cited that totally irrelevant, but supposedly pertinent, example, the following question and answer terminated his redirect examination [R. 441] :

“Q. To make the record clear, is it your testimony that this technique of eliminating moments in designing machines or pieces of apparatus is what you referred to as principles of symmetry or concentricity, which you stated were known and expected of

machine designers, to your knowledge, ever since you have been in school?

“A. That is what I meant when I testified to the symmetry, concentricity and coaxiality, and the laws of it for relative movement or non-movement.”

Not only was Mr. Schwarz unable to cite any example of an instance previous to Leishman's invention in which a coaxial relationship between two members had been used to prevent them from rotating, but in illustrating the principle which he said was involved, his example was far afield and there is little pertinence in his inadequate explanation of how a mechanic could have arrived at Leishman's structure through an application of known principles. Moreover, this explanation was made by an engineer who himself worked on an adjustable tappet tuner [R. 336] but failed to arrive at Leishman's simple structure and interposed two racks and two lugs between each tappet and the rotatable positionable member [R. 337-338], making a total of ten racks and ten lugs in a five button tuner [Plaintiff's Exhibit 3].

IV.

Appellee's Counsel Advances Still a Fourth Theory Which Is Incompatible With the Others.

In Plaintiff's Supplemental Reply Brief, an attempt was made to defend the theory of creeping advanced by the Court of Appeals for the Tenth Circuit as well as the different theory advanced by appellee's expert Schwarz. Nothing was said about the self-refuting theory of Dr. Spotts. But in attempting to support the other two theories, appellee's counsel evolved still a fourth. Counsel started with the figures from the Tenth Circuit opinion upon which appellant had drawn red circles to show that the

axis of the tappet was in the wrong place in Fig. 1. To these figures, appellee's counsel added *green arrows*. In the following portion of the said Supplemental Reply Brief, appellee refers to these green arrows as *lines of force f* [R. 1181-1182]:

“* * * As Judge Phillips stated, no substantial creeping is present in Figure 2. The reason for this is that such force F passes neither to one side nor to the other of the rocker axis D. On the other hand, such line of force f in Figure 1 passes well to the right of the rocker axis D, and since this represents an unbalanced force applied to one side of center pivoting or creeping will occur. Similarly, in Figure 3 the line of force f passes to the right of the rocker axis D and in Figure 4 it likewise passes to the right of rocker axis D. In both of these figures, as previously demonstrated, creeping will occur.”

In drawing the green arrows, plaintiff in each case extended these alleged lines of force directly from the pivot of the tappet, and in a direction at right angles to the surface of the rocker. There is no basis whatever for such lines in the present record nor in the record that was before Judge Phillips. The most significant thing about these newly-conceived lines of force, as represented by plaintiff's green arrows, is that they are different from the lines of force to which Judge Phillips attached importance, and different from the line that Dr. Spotts hypothesized. Relying upon his erroneous theories of levers, Judge Phillips explained creeping by saying [p. 371] “. . . the downward force at point O has the advantage of greater leverage than the downward force at point B, and the resisting force of the rocket at point B has the advantage of greater leverage than the resisting force of

the rocker at point O." While Judge Phillips thus had his lines of force extending through points B and O, the plaintiff now has them extending downwardly *from the pivot of the tappet* in a direction at right angles to the tilt of the rocker. The plaintiff purportedly tries to support Judge Phillips' theory, but thus advances still a different theory of its own. What better proof could there be that the cause of creeping would not have been apparent to any mechanic skilled in the art in 1934 when appellant filed his original patent application?

Actually, it would make no difference whatever if the theory behind appellant's invention had become clear to every schoolboy the day his patent issued. Most inventions are simple in retrospect. The important thing is that no one had a simple cure for creeping until Leishman provided that cure. Schwarz himself operatively interposed two racks and two lugs between every tappet and the rotatable member, as shown by the sketch of his Exhibit 3 tuner on page 30 of this brief.

V.

Important Parts of the Record Referred to in the Foregoing Brief.

- A. Mr. Schwarz Admits That the Axis of the Tappet and the Axis of the Rocker Are Coaxial in Plaintiff's Exhibit 2 Tuner to the Complaint, Now Defendant's Exhibit JJ.

"Q. (By Mr. Lyon): Mr. Schwarz, I show you Defendant's Exhibit JJ, and Plaintiff's Exhibit No. 2 to the complaint in this case, and ask you if you are familiar with those. A. Yes, I am.

"Q. Do you know who designed those tuners?"

“A. Well, I participated in the design of them and directed intimately a good portion of the design.

“Q. Is General Motors at the present time equipping its current models with tuners like those shown by these last mentioned exhibits?

“A. Some of the current models have this particular type of tuner.

“Q. Can you tell us what one?

“A. The Chevrolet and the Oldsmobile and the Cadillac.

“Q. You recognize this tuner as of the type which has been referred to here as having an adjustable tappet and a rocker? A. Yes, I do.

“Q. Will you state whether or not in tuners of that type as you have designed them and General Motors has produced them, the centers of those tappets are arranged so that they are symmetrical or concentric or identical with the centers of the rocker?

“A. Yes, I believe they are concentric.

“Q. You understand that that has been referred to here as coaxiality where those two centers register? A. Yes.” [R. 339-340.]

B. Mr. Schwarz Admits That the Axis of the Tappet and the Axis of the Rocker Are Coaxial in Plaintiff's Exhibit 1 Tuner to the Complaint, Now Defendant's Exhibit NN.

“Q. (By Mr. Lyon): Mr. Leishman has called attention to the buttons, or whatever you call them, that appear on the tuners such as shown by Exhibit NN, and Exhibit 1 to the complaint; what are those buttons for?

“A. It is an ornamental feature that Chevrolet wanted something different. They wanted not to

have to pull a button off to set up the station, so that we hinged the buttons to make it easier to get at the lock-up screws. You pull the button up so you can get to the screw, and then the lock-up screw then becomes available. If you didn't do that, you would have to pull the button off.

“Q. Is that tappet in that type of tuner carried by that button?

“A. No; the tappet is carried by the plunger.

“Q. You have stated in connection with the tuner of the type constituting Exhibit 1 to the complaint, that it has a virtual center. Does the tappet have a pivot which is coaxial with the axis of the rocker?

“A. The tappet's pivot is coaxial with the axis of the rocker.” [R. 347-348.]

C. Testimony Regarding Tuners That Were on the Market Prior to Leishman's Combination.

From page 174 of the record:

“Mr. Flam: I will reframe the question and ask whether there are any other tuners that came out after this Zenith-Schaefer tuner came out and before your patent was issued?

The Witness: Either shortly after the Zenith tuner appeared or about the same time there were some motor-driven tuners on the market of the same general class as that shown in the Jacke patent. They didn't operate in the same way but the motor turned the condenser and the dials in response to the pressing of buttons by the operator of the set.

“Q. (By Mr. Flam): Now, how long did they stay on the market?

“A. They were on the market only about two years too. They were in the market about the same

length of time that this Zenith tuner, Exhibit I, was on the market.

“Q. Did you state about when the Zenith tuner was on the market?

“A. I think about 1927 and 1928 or '28 and '29. It was in the period between '27 and '29.”

From pages 179 to 181 of the record:

“Q. (By Mr. Flam): Now, aside from these tuners that you mention that were on the market before the Crosley device came out, were there any others, any other types of tuners?

“A. Well, about 1936 the motor-driven tuners re-appeared on the market. I don't know that they were exactly the same construction as those that appeared some seven or nine years earlier, but they were motor-driven tuners that were introduced on the market about 1936. They were for sale in 1936. And also about that same time the so-called telephone-dial type tuners appeared on the market.

“Q. Can you find any patents in this book of patents that we have had to illustrate the telephone-dial type of tuner? I want to call your attention to No. 17, I think, or No. 16.

“A. Yes. No. 16 shows a patent issued to Fitzgerald and it shows a dial resembling in a general way, the dial on a telephone, and the patent to Underwood is of a similar construction, but instead of putting your finger in little recesses or holes as you do on the Fitzgerald device, it is provided with a lever that you would turn in the same manner that you would turn your finger in operating the Fitzgerald mechanism.

“The Court: The Underwood patent is No. 17, isn't it?

“The Witness: Yes, that is right, your Honor, Underwood is 17.

“Q. (By Mr. Flam): Did any of these devices that you designate as telephone dial type come into commercial use?

“A. Yes; they became quite common in 19—well, they were first introduced and used in a limited way in 1936 and they became very common in 1937. Most manufacturers used them in their lines.

“Q. Now, what made it possible for them to—do you know what made it possible for them to become so popular in the later years?

“A. Well, in and of themselves they weren’t accurate at all. They were not commercially usable but they appeared in 1936, both the motor driven tuners and the telephone dial type tuners because about 1936 an electrical circuit was developed, called automatic frequency control, which compensated electrically for the mechanical inaccuracy in these tuners. Fitzgerald’s mechanism was very inaccurate and the motor driven tuners were not of sufficient accuracy—didn’t provide the selectivity required, but if you got into the approximate position, if you turned the dial by means of the automatic tuner to just approximately the right position the automatic frequency control would electrically pull the circuits into tune and that made it possible to use tuners that were otherwise inaccurate and which hadn’t been commercially usable before.”

From pages 182 to 184 of the record:

“Q. (By Mr. Flam): What company do you remember marketed the telephone dial tuner in 1936 and 1937?

“A. In 1936 there were only two or three concerns that came out with them. The first, I believe, was Philco. We have their announcement here as one of the exhibits, and Grigsby-Grunow also introduced one in 1936.

“Q. Is this the announcement you have in mind about the Philco telephone dial type of tuner?

“A. That is a photograph of the folder, folded in such a way that it shows all the pages of the original folder. I picked one up at the American Radio Company then located between Broadway and Hill on 8th Street. Their stamp is on the back of this folder and it shows in the photograph.”

* * * * *

“Q. (By Mr. Flam): Were motor driven tuners and telephone dial tuners used in the succeeding year's models?

“A. Yes, they were very common in 1937. Most manufacturers put out one or the other. The telephone dial tuner being naturally the cheapest was the most popular.

“Q. How about 1938?

“A. No, they came out in—they were 1938 models but the 1938 models were nearly always shown at the radio show in June, the national radio show and so the 1938 models would always be announced—were announced in 1937.

“Q. Do you have anything that will show how extensive the use of such tuners was in 1937?

“A. There is a page in the book of exhibits in the Associated case, volume 3, that is a re-print of, I believe, page 21 of the June number for 1937 of Radio Retailing and it shows a double spread containing a picture of the dials and controls on the new

sets that were coming out and there is an account there of the popularity of the type of these sets—of the sets of this type, rather.

"There is a volume, Mr. Flam, in that case on the table there.

* * * * *

"The Clerk: Defendant's Exhibit V for identification.

"(The document referred to was marked Defendant's Exhibit V for identification.)"

From pages 187 to 188 of the record:

"Q. I show you this book entitled 'Automatic Frequency Control Systems' by John F. Rider, including the jacket. What has that got to do with the automatic frequency circuit controls that you have been talking about?

"A. The jacket or book? You mentioned the jacket and the book.

"Q. The jacket and the book.

"A. Why, the jacket—

"Q. What was the book for? Did it have anything to do with these automatic frequency controls that you are talking about?

"A. Yes. This book was put out to acquaint service men in the radio industry throughout the country, with the automatic frequency control systems so that they could repair these sets and so that they would understand them. That was the purpose of the book.

"Q. What are those pictures on the jacket? Can you identify them?

"A. The pictures on the jacket are of more telephone dial tuners and the dials of some motor driven tuners that were common at the time the book was published. This book, of course, speaks for itself but

it shows that it was originally printed in October of 1937. It was copyrighted in 1937 by John F. Rider.

“Q. I would like to have you identify those features which are particularly pertinent in connection with this—with the importance of utilizing automatic frequency control circuit with the telephone dial type of radio tuning. I don’t want you to read it. I just want you to note the pages so that the court may read them afterwards.

“A. Well, in the foreword there is page 7 and page 8 designated by Roman numerals—small Roman numerals and then in the introduction pages 1, 4 and 5 in the text of the book and page 63; pages 87 to 92. Pages 100, 102, 127, 128, 129, 131 and 141.

“Mr. Flam: I offer those pages of the book referred to by the witness in evidence and the cover.

“The Court: They will be received as Defendant’s Exhibit W and W-1.

“(The documents referred to were marked Defendant’s Exhibits W and W-1 and received in evidence.)”

D. Testimony Showing That It Is Immaterial Whether the Tappet Moves in a Straight Line or in an Arc.

From pages 164 to 169 of the record:

“Q. (By Mr. Flam): Now, in connection with that model, Mr. Leishman, does it make any difference in your device whether the tappet is moved in an arc to contact the rocker or whether it is moved in a straight line to contact the rocker?

“Mr. Lyon: I object to that, your Honor. The witness is asked if it makes any difference in his device. We have a decision here, two decisions of the Circuit Court of Appeals on the point and it is asking him for a conclusion without the facts being stated on which the conclusion is to be based and I

think it is a conclusion of law when he asks him if it makes any difference in his device. I don't know exactly. It is not a very illuminating question, but if it is intended to be a statement derogatory of the court of appeal's decisions, why, I object to it as out of order.

"Mr. Flam: I am not offering it in derogation of any opinion. I am trying to show here that there are other factors not considered by the Circuit Court of Appeals which makes it necessary for them to revise that opinion.

"The Court: Objection overruled.

"Q. (By Mr. Flam): Will you answer the question?

"A. No, it makes no difference at all by what route or course the tappet comes into engagement with the rocker.

"I think that the models in the L series containing the rocker L-1 and the tappet L-2 demonstrate that you can bring it down in an arc or you can bring it down straight or you can bring it down from the other side and it is all the same story. It doesn't make any difference. It doesn't make a bit of difference to my device in the operation of the device, what path the tappet takes to and from that coaxial position. The point is, you have got to have it there when the adjustment is made and then you have got to move it out of the way so that the rocker can turn and when the device is to be tuned again the rocker has to be pushed down into engagement and the route, I think, is immaterial. We have a chart here which further illustrates that point.

"Q. Will you demonstrate from the chart that point?

"A. Yes, sir.

“Q. If you will.

“A. Yes. (Showing document to Mr. Lyon.)

“Q. (By Mr. Flam): May I ask the clerk to mark this for identification?

“Mr. Lyon: May I see it for a moment?

“The Court: What does the chart purport to be? I was looking at one of these models.

“Mr. Flam: The title of the chart is the path of the tappets to and from the coaxial position is optional with the designer and I am having it marked for identification.

“The Court: I suppose it is just illustrative of what the defendant has testified to?

“Mr. Flam: Yes; and there are other points I would like to show.

“The Court: It may be so marked, Mr. Clerk.

“Mr. Lyon: May it be subject to the same objection, your Honor, that I made with reference to the last question?

“The Court: Yes.

“Mr. Lyon: Very well, your Honor.

“The Court: This is simply used as an illustration but it is a part of his answer and you objected to it.

“Mr. Lyon: Yes.

“The Court: And I suppose your objection goes to this also?

“Mr. Lyon: Yes.

“The Clerk: Defendant's Exhibit N for identification.

“(The document referred to was marked Defendant's Exhibit N, for identification.)

“Q. (By Mr. Flam): Go ahead and explain it, Mr. Leishman.

“A. The second figure from the bottom, it will be noticed, is the figure, the Figure 2 of the patent, colored so that the tappet is identified by the red color and the rocker is green and the lever or manual operable member is in blue, and the path that the rocker [tappet] takes to and from the coaxial position is indicated by the curvilinear line passing through the center of the tappet and center of the rocker. Of course that curvilinear line will be an arc around the pivot as the center. Now, suppose you just turn the tuner around the other way. Then it would look like the figure at the bottom on this chart and you would have—and the path of the tappet would be exactly opposite from what the path is when it is oriented in the position shown in the patent. And I think it is obvious that it makes no difference to the operation of my device if you turn it around and have it face north instead of south and in that case the curvilinear path turns to the right in one case and turns to the left in another case and yet the device operates precisely the same and it makes no difference to the operation of the device whether the path turns to the left or to the right.

“I think it is clear that any intermediate position would not affect the operation of the tappet. Then I have shown other modifications which I think also are obviously operable.

“I have changed the shape of the lever here and pivoted the lever above the position shown in the patent drawing. In that case the path that the tappet would take to and from the coaxial position is indicated by the curvilinear line passing through the center of the tappet in the second figure from the top of the chart.

“In the figure at the top on this chart the lever has been extended and the curvilinear path is more

nearly straight, but in all cases the tappet can be moved out of engagement with the rocker and it can be moved back into engagement with the rocker and no matter where you put the pivot of the lever the same thing will take place, whether you put it on this side or whether you put it on that side or whatever other guides you might make for the plunger portion —this portion of the tappet that extends down is a plunger, a reciprocating member that goes in and out of the rocker. Then on these flaps I have arranged the—I am in my own way here no matter how I turn. Mr. Flam, will you hold this one back for me if you don't mind? I have arranged it here so that you can just move another portion of the drawing so that it can be superimposed over the patent, over the enlargement from the patent drawing and that shows the tappet mounted on a plunger and, of course, that will take it straight up and down. It moves from the coaxial position shown out of engagement, and when you press it down it will move it back into engagement in a straight path which is the exact average between the path shown in the third figure from the top of this chart and the figure at the bottom on the chart. In this case guides have been provided both above the rocker—the guides to keep the tappet moving in a rectilinear path instead of being curvilinear. In the other drawing it is rectilinear and then on the other flap we have drawn the plunger so it passes all the way through the rocker, but the tappet in this case is shown mounted on the plunger and we have the guides above in this case and the other one is below the rocker. But the motion is just the same and I think that chart thoroughly demonstrates that it is absolutely immaterial to the operation of the device whether the tappet moves away from its coaxial position and back again

in a curved path or how big the curve is and what direction the curve goes or whether it is a straight line which is an average of all the curves.

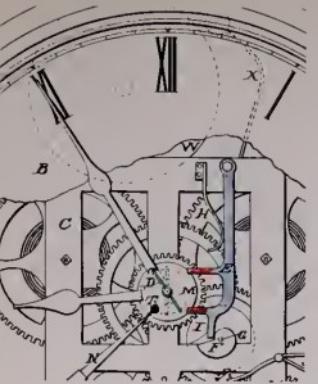
“Mr. Flam: I offer the chart in evidence.

“Mr. Lyon: Same objection as previously noted when the chart was offered, your Honor.

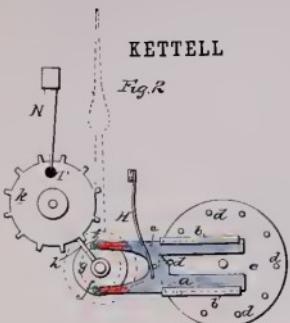
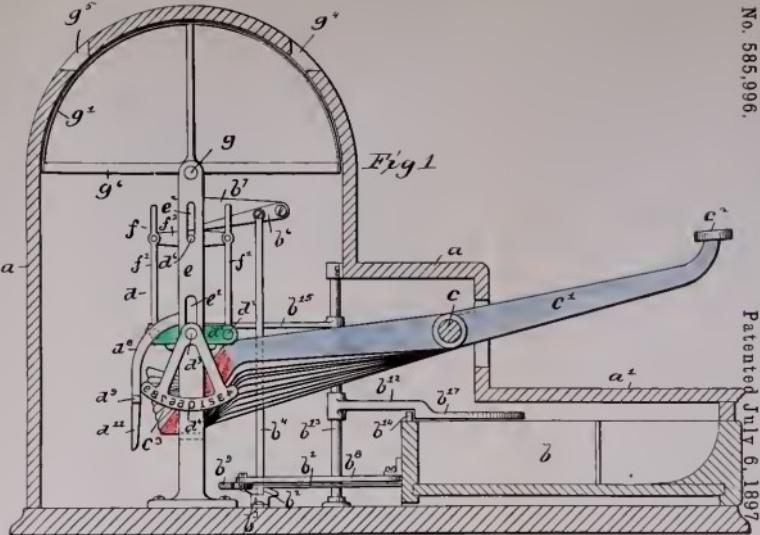
“The Court: Same ruling. Objection overruled.

“The Clerk: Defendant’s Exhibit N in evidence.

“(The chart referred to was marked Defendant’s Exhibit N, and was received in evidence.)”



From Fig. 1
Kettell Patent
No. 290,894



Woodbridge's
Fig. 10
(left)

